

THE IRON AGE

Published every Thursday Morning by David Williams Co., 14-16 Park Place, New York.

Vol. 80: No. 21.

New York, Thursday, November 21, 1907

\$5 00 a Year, Including Postage.
Single Copies, 15 Cents.

Reading Matter Contents.....page 1502
Alphabetical Index to Advertisers " 213
Classified List of Advertisers " 203
Advertising and Subscription Rates " 212

Reed F. Blair & Co.

Frick Building, Pittsburgh, Pa.

COKE, PIG IRON

'CHROME ORE

FERRO MANGANESE

SILICON SPIEGEL, ETC.

The American Mfg. Co.
Ropes and Twines
65 Wall Street, New York

BRISTOL'S Steel Belt Lacing
SAVES
Time, Belts, Money.
Greatest Strength
with Least Metal
Send for Circular Q and Free
Samples

THE BRISTOL CO., Waterbury, Conn.
NEW YORK and CHICAGO

SAMSON SPOT CORD

Also Massachusetts and
Phoenix Brands.

SAMSON CORDAGE WORKS, Boston, Mass.

TURNBUCKLES

Cleveland City Forge and Iron Co., - Cleveland, O.

TURNBUCKLES.

MERRILL BROS.,
465 to 471 Kent Ave.,
Brooklyn, E. D., N.Y.

SOFT COAL.

Pilling & Crane Girard Building, Phila.
Machesney Bldg., Pitts'g
Empire Bldg., New York

M. F.

on a box of Roofing Tin
is more than a Trade Mark
—it is a mark of perfection
and stands for the oldest
and best Old Style Terne
Plate ever made.

See
AMERICAN
SHEET & TIN PLATE
COMPANY'S
Ad. on Page 16.

Remington
AUTOLOADING SHOTGUN

Powerful Penetration

The Remington Autoloading Shot Gun has plenty of penetration. One sportsman writes, "I killed a goose at 90 yards and a Mallard at 76 yards with my Remington Autoloading Gun." An ideal wild-fowl gun which loads itself, shoots hard and increases the pleasure by lack of recoil. The only gun of its kind on the market. Dealers, don't overlook this salable Remington.

REMINGTON ARMS COMPANY,
Write to M. HARTLEY COMPANY, Sole Representative,
313-315 Broadway, New York City.

WATER TUBE BOILERS **The Babcock & Wilcox Co.**
See page 56 **85 Liberty Street**
New York

ARE YOU CARRYING "CAPEWELL" NAILS IN STOCK??

Hardware Dealers who do so find it very **profitable**. Most of the Horseshoers of the United States buy this brand, and **our salesmen turn orders over to merchants** who have a stock of "Capewell" nails.
Be Sure and Get Your Share of the Business !!

Made by
The Capewell Horse Nail Co., Hartford, Conn., U.S.A.
THE LARGEST MANUFACTURERS OF HORSE NAILS IN THE WORLD



JENKINS '96 SHEET PACKING

The Original Unvulcanized Packing. Suitable for all steam joints. Not only does it make a tight joint quickly, but it makes a joint that *will last*. Made in sheets, and also, to order, in GASKETS cut to any size or shape. All genuine is stamped with Trade Mark as shown in the cut, and is guaranteed.

JENKINS BROS., New York, Boston, Philadelphia, Chicago, London

"Swedoh" Cold Rolled Steel is unex- Drawing and Stamping
THE AMERICAN TUBE & STAMPING COMPANY
(Water and Rail Delivery) SEE PAGE 22



MAGNOLIA ANTI-FRICTION METAL

The Standard Babbitt of the World

We manufacture
everything in the
Babbitt Line.

MAGNOLIA METAL CO.



New York: 115 Bank St. Chicago: Fisher Building. Montreal: 31 St. Nicholas St.

BRIGHT TIN

we call special
ATTENTION
 to the superior
FINISH
 of our
CHARCOAL
BRIGHT TIN PLATES
 in the REGULAR as well
 as in the
DEEP DRAWING
QUALITIES
FOLLANSBEE
BROTHERS
COMPANY
 Manufacturers
PITTSBURGH

BRASS { SHEET
ROD
WIRE
COPPER { SHEET
ROD
WIRE

GERMAN { SHEET
ROD
SILVER { WIRE

LOW BRASS, SHEET BRONZE,
SEAMLESS BRASS AND COPPER
TUBING, BRAZED BRASS AND
BRONZE TUBING : : : :

Waterbury Brass Co.
WATERBURY, CONN.

99 John St., New York. Providence, R. I.

Bridgeport Deoxidized Bronze
& Metal Co.
BRIDGEPORT, CONN.

Phosphor and Deoxidized
Bronze

Composition, Yellow Brass and Aluminum Castings, large and small

Matthiessen & Hegeler Zinc Co.

La Salle, Illinois.

SMELTERS OF SPELTER

AND MANUFACTURERS

SHEET ZINC AND SULPHURIC ACID

Special Sizes of Zinc cut to order. Rolled Battery Plates.
Selected Plates for Etchers and Lithographers' use.
Selected Sheets for Paper and Card Makers' use.
Stove and Washboard Blanks.

ZINCS FOR LECLANCHE BATTERY.

BRASS FOUNDRERS J.J. RYAN & CO.

105-109 So. Jefferson St., Chicago.

Best Bronze, Babbitt Metals, Brass and Aluminum **CASTINGS**
On Short Notice

GERMAN SILVER | **NICKEL ANODES**
THE SEYMOUR MFG. CO. - - SEYMOUR, CONN.

HENDRICKS BROTHERS
Proprietors of the **Belleville Copper Rolling Mills,**
Manufacturers of Braziers' Bolt and Sheathing

COPPER
COPPER WIRE AND RIVETS

Importers and Dealers in
Ingot Copper, Block Tin, Spelter, Lead, Antimony, etc.
49 CLIFF ST., NEW YORK.

The Plume & Atwood Mfg. Co.
Manufacturers of
Sheet and Roll Brass
and
WIRE

Printers' Brass, Jewelers' Metal,
German Silver and Gilding Metal,
Copper Rivets and Burrs

Pins, Brass Butt Hinges, Jack Chain, Kerosene
Burners, Lamps, Lamp Trimmings, &c.

279 Broadway, NEW YORK
Room 508 Heyworth Building, East Madison St., CHICAGO, ILL.

Rolling Mill Factories
THOMASTON, CONN. WATERBURY, CONN.

SCOVILL MFG. CO.

MANUFACTURERS OF
BRASS, GERMAN SILVER,
Sheets, Rolls, Wire Rods,
Bolts and Tubes,
Brass Shells, Cups, Hinges, Buttons,
Lamp Goods.

Special Brass Goods to Order.

FACTORIES:
WATERBURY, CONN.
DEPOTS:
NEW YORK **CHICAGO** **BOSTON**

Henry Souther Engineering Co.

HARTFORD, CONN.

Consulting Chemists, Metallurgists and Analysts.

Complete Physical Testing Laboratory.
Expert Testimony in Court and Patent Cases.

Arthur T. Rutter & Co.

256 Broadway
NEW YORK

Small tubing in Brass, Copper, Steel, Aluminum, German Silver, &c. Sheet Brass, Copper and German Silver. Copper, Brass and German Silver Wire. Brazed and Seamless Brass and Copper Tube. Copper and Brass Rod.

"PHONO-ELECTRIC"
WIRE. "IT'S TOUGH."
TROLLEY,
TELEPHONE

and
TELEGRAPH
LINES.

Mills Bridgeport Conn. BRIDGEPORT BRASS COMPANY,
Postal Telegraph Bldg. Broadway and Murray St., New York


PHOSPHOR-BRONZE
GERMAN SILVER

THE RIVERSIDE
METAL CO.
RIVERSIDE, N. J.





THE IRON AGE

New York, Thursday, November 21, 1907.

The Smurr & Kamen Automatic Wire Crimper.

There is nothing new in the crimping of wire by passing it between cog wheels, but there are features in the automatic operation of the machine here illustrated that are of special interest. It is manufactured by Smurr &

crimped, and with the use of wheels with the required tooth pitch and properly adjusted in relation to each other, any distance between crimps and any depth of crimping may be obtained. The product of the machine is used principally in woven wire fences, railings, partitions, elevator inclosures, sign supports, and skylight and window guards.

The machine is mounted on heavy cast iron legs and

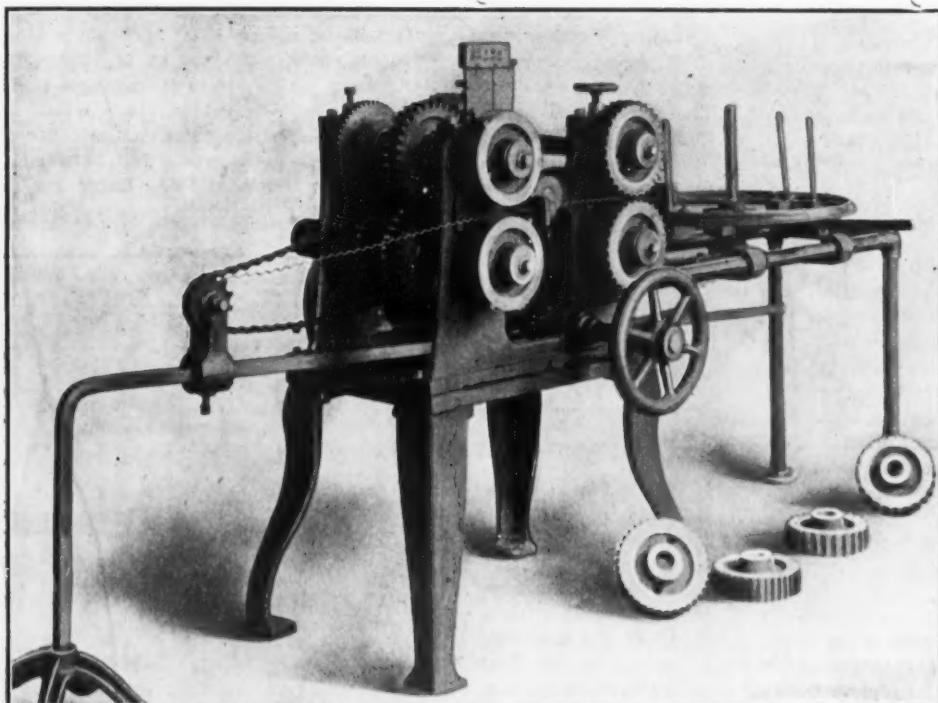


Fig. 1.—The Automatic Machine for Crimping Wire Made by Smurr & Kamen, Chicago.

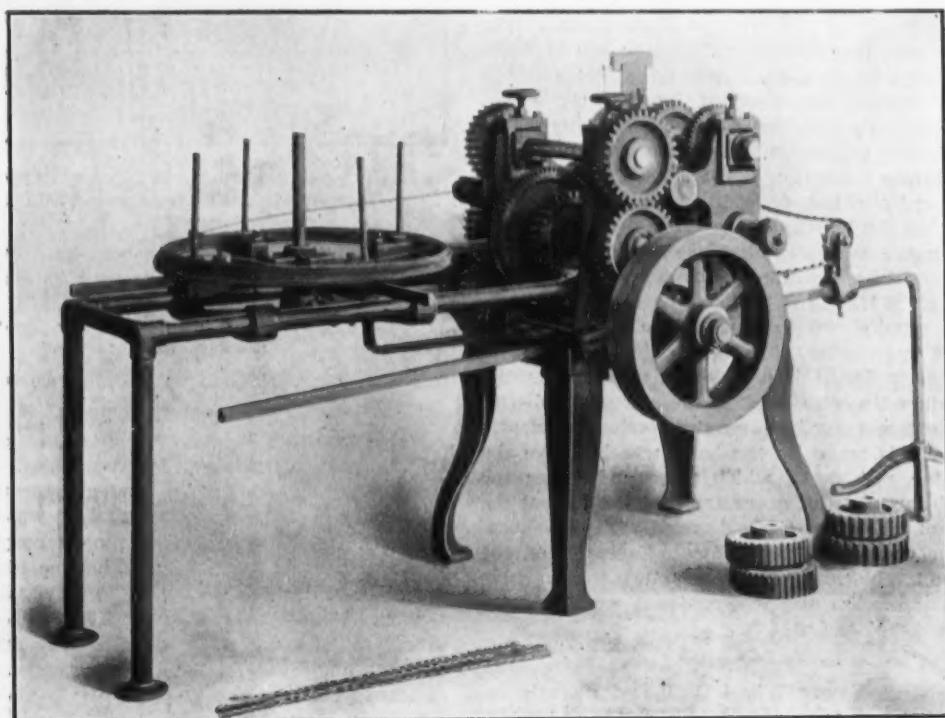


Fig. 2.—Opposite Side of the Smurr & Kamen Automatic Wire Crimper.

Kamen, 97 South Clinton street, Chicago, Ill., and is arranged to cut off the wire to specified lengths and count the pieces. Another particular feature is the arrangement for stopping the machine if the wire becomes tangled or caught. Either flat or round wire may be

the crimping rolls and cutting off wheels are driven through spur gears from a belt driven heavy rimmed pulley, as shown in the two views herewith, of which Fig. 1 shows the operating side and Fig. 2 the driving side.

When working with wire running in unbroken length

directly from the reel, it is desirable that the feed shall be continuous. This is accomplished by a variable intermittent shearing device beyond the crimping rolls, to avoid interfering with the continuity of the feed, which is adjustable to cut any length within a given range. Each of the cutting wheels, shown in Fig. 1, carries two inserted shear blades that contact with their mates on the other wheel at each revolution, the two being geared together to run at the same speed. With the main drive running continuously, a variable cut-off would be impossible if these wheels were revolved continuously. To secure the proper interval between their operations the lower wheel shaft carries a loose gear meshing with a gear in the driving train. The sprocket wheel, driving a measuring chain of the common link type with interposed trip links, is attached to the left face of the loose gear, and the opposite face of the latter, through a positive tooth clutch, engages the adjoining spur gear. Two projecting lugs set in a wheel on the upper cut-off shaft, directly over the chain sprocket, are successively engaged by the trip links in the constantly moving chain. The motion thus communicated to the upper shaft causes the narrow faced gear on the extreme left in Fig. 1 to start the gear immediately beneath it, which is forced inwardly along the lower shaft by a divided or two-step cam working against a cam surface on the frame. By this means the cut-off mechanism is thrown into action for a half revolution of the shearing wheels, thus making a cut at the desired point as the blades meet and pass. The entire strain of cutting is borne by the gears, the duty of the chain being only to throw the train into gear, after which it runs idle until another trip link comes in contact with one of the actuating lugs. The drive of the cutting wheels is thrown out after each engagement by a coil spring between the sprocket wheel and the cam spur.

Fig. 2 illustrates the automatic stop by which the drive is disengaged if the wire kinks or tangles. It will be noticed that the wire reel is supported on a pipe frame on which it slides. A flat bar fastened to the reel frame by a vertical leg extends into the body of the machine and by a wedge actuates a rod lever connected with a clutch in the hub of the driving pulley. If the uncoiling of the wire should be interrupted, the pull of the feed would draw the reel frame and stop bar toward the machine and throw out the drive.

The normal speed of the crimping wheels is 42 rev. per min., at which rate approximately 5000 ft. of crimped wire per hour can be run out from a single strand. The machine will take two strands of No. 9 or one of No. 3 round Bessemer wire, or $\frac{1}{2}$ -in. No. 16 flat wire; with the latter better results are obtained by working single strands. The heavily weighted rim of the driving pulley provides sufficient momentum to prevent any noticeable retardation during the action of the cutting shears. Any length, varying by inches, from 13 in. to 14 ft., may be cut by changing the length of the chain and placing the tripping links the necessary distance apart. Each cut made is registered by an automatic counter.

One set each of 1, $1\frac{1}{4}$ and $1\frac{1}{2}$ in. extension mesh crimping rolls are supplied with each machine and extra sets are furnished upon order. The hand wheel on the side of the machine in Fig. 1 is used, when the drive is disengaged, to start the wire between the crimping rolls, to test the adjustment for the required crimping depth. The adjustment is made by the hand wheels above the upper crimping roll shaft, which raise and lower the shaft through screws. Cut gears are used throughout the machine, all of which are taper doweled and pinned, except the loose gear mentioned before. Exclusive of the reel stand and table and the chain stand, the machine weighs about 1600 lb., and it occupies a working floor space of from 4 x 12 to 4 x 14 ft.

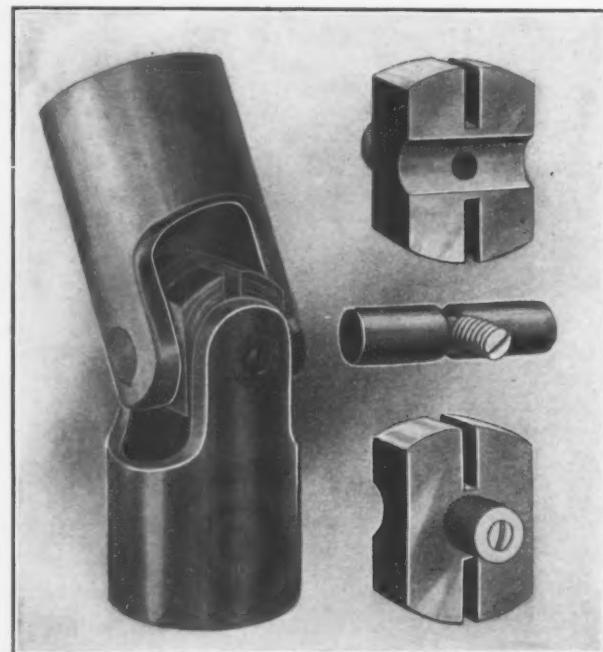
The Pittsburgh Emery Wheel Company, recently organized at Pittsburgh to manufacture abrasive and grinding machinery, has bought a tract of land at Rochester, Pa., and has awarded a contract for the erection of a two-story main building, 70 x 100 ft., which will contain the grinding machinery and wheel finishing departments. Contracts have been placed for four kilns, which are expected to be ready by January 1. An order has been

placed with the Erie City Iron Works, Erie, Pa., for the engine and boiler, but the contract for the machine shop equipment has not yet been given out. Charles G. Smith is president and Walter Hetzel is secretary.

The Baush Universal Joint.

The Baush Machine Tool Company, Springfield, Mass., has patented a new universal joint, shown with its details in the illustration, which is designed to transmit power in either direction at high speed, for heavy as well as light work, and if required with a considerable angle between the coupled parts, as compared with the usual practice. The company has had much experience with universal joints in its multiple spindle drilling machines, and the new joint is a result.

It will be noticed that the center block of the joint is in two parts, separated by a pin running through one of the forks. This pin is of the same size as the lugs on the sections of the center block which form the bearing ends and project through the other fork. This arrangement allows inserting felt between the two pieces of the center block, and the latter are slotted at right angles to their opposing faces to receive felt inserts.



Assembled View and Details of the New Universal Joint Made by the Baush Machine Tool Company, Springfield, Mass.

The purpose of the felt is to hold lubricating oil, which permits running the joint at very high speeds and for a long time without renewing the lubricant.

The center block and pins are of bronze and the forks of steel, consequently all bearings of the joint are steel against bronze, which gives a small coefficient of friction.

The American Wheel & Vehicle Company, Penobscot Building, Detroit, Mich., has purchased a site at St. Antoine street and Trombley avenue for the erection of a new factory, the main building of which will be 157 x 200 ft. It is the purpose of the company to equip this plant with wood and iron working machinery which as far as possible will be electrically driven by independent motors. The Jeffrey patent wheel will constitute the chief product of the plant, which will have capacity to turn out about 60,000 complete sets per year. S. T. Allen is manager of the new company.

On the eve of its dissolution by limitation, the syndicate of the German Wire Rod Mills has been renewed for a period of four years. In the general meeting it was decided to maintain recent prices and to change the location of the headquarters of the syndicate to Duesseldorf.

The New Hendey 20-Inch Shaper.

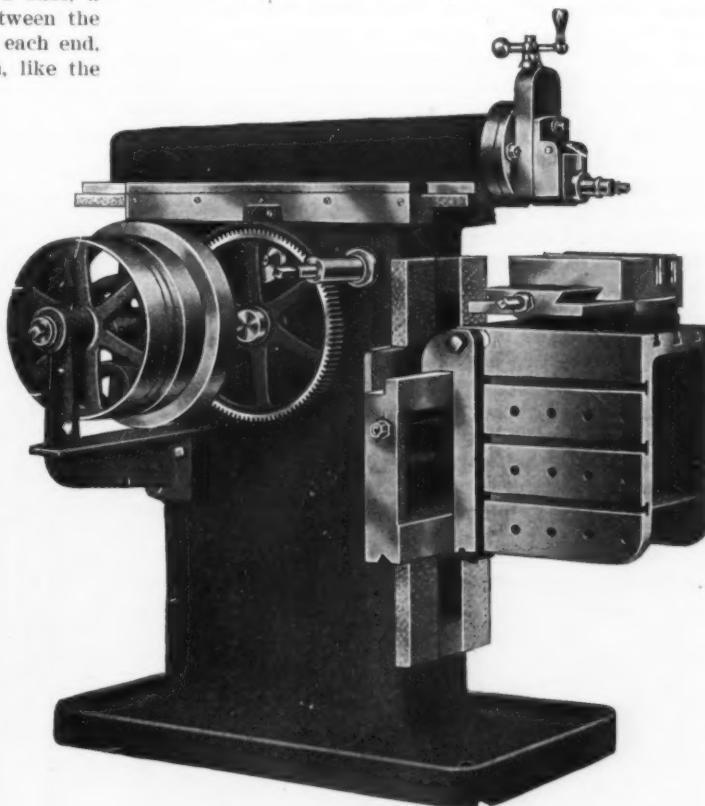
The friction clutch driven pillar shaper shown in the illustrations is the latest machine of its class brought out by the Hendey Machine Company, Torrington, Conn. It is a result of redesigning and improving the company's former machine, and is heavier, has a flanged base, a heavier and deeper cross head, a taper gib between the cross rail and saddle and adjusting screws at each end, and a larger diameter cross feed screw, which, like the down feed screw, is fitted with a dial reading to thousandths of an inch. An entirely new feature is a safety stop attached to the front dog, which prevents the ram from being returned so far back as to cause the head, if set for an angular cut and at the bottom of its travel, to strike the corner of the base. The machine is especially adapted for tool making and die work. It has a stroke of 20 in., a cross feed of 19½ in. and a vertical feed to the head of 4½ in.

The patent friction clutch driving mechanism gives accurate and certain reversal of stroke and maintains uniform cutting speed the entire length of stroke, gives quick return and allows changing the length and position of the stroke while the machine is running. The reversing mechanism has a micrometer adjustment for the cutting stroke which enables the operator to adjust the stroke with great exactness after the dogs have been set and the machine started, making it possible to plane to irregular lines, drilled holes, &c. This mechanism is provided with a locking spring and point which insures the friction clutch remaining in the pulley the full length of the stroke, and makes the reversing positive even at slow speeds.

The ram is driven by a train of double

gear inside the base, running in double racks doweled and screwed to the under side of the ram, affording a powerful and constant drive the full length of the maximum stroke. A bar or shaft 2½ in. in diameter can be passed under the ram when cutting keyseats or simi-

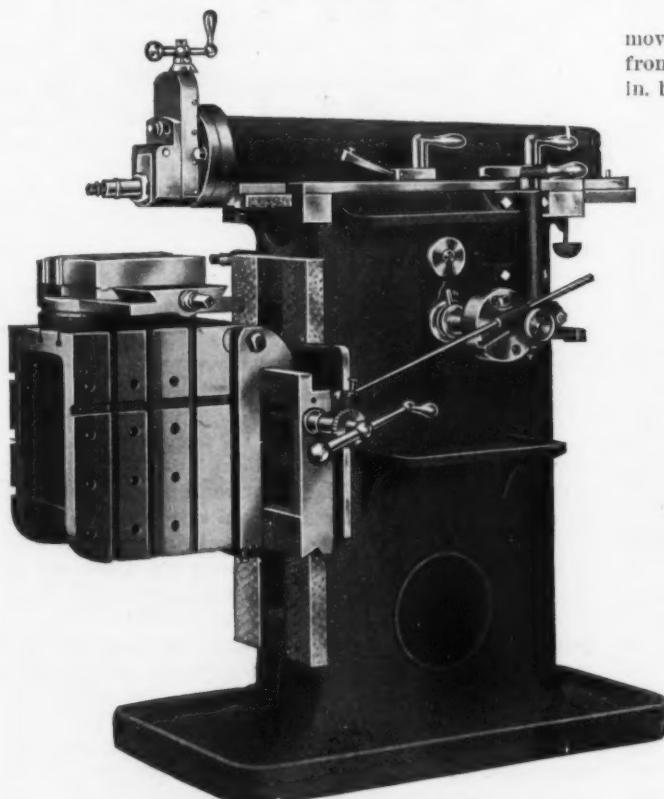
lar work. The adjustable table is arranged to plane any desired taper by being hinged to the top of the saddle and provided with a screw at the bottom for elevating the forward end. The table is of box form, making it strong and rigid under heavy cuts. Work can be bolted directly on either side or the top, and the vise can be mounted on either of these working surfaces. When the table is re-



Driving Side of the New 20-In. Hendey Shaper.

moved the work can be fastened on the saddle or on the front of the column. The improved vise shown opens 8 in. between the jaws, and the round style vise, which can be furnished if desired, opens 5 in. Both are graduated, swing in a circle and have steel faced jaws.

The machine has two cutting speeds: the range of strokes is from 8.55 at 20 in. to 171.14 at ½ in. for low speed, and from 10.1 at 20 in. to 202 at ½ in. for high speed, at the normal countershaft speed of 260 rev. per min. The table is 10½ x 14 in., and has slots 9-16 in. wide. The tool post takes a ½ x 1 in. tool. The complete weight of the machine is 1990 lb.



Operating Side of the New Hendey 20-In. Shaper.

gearing inside the base, running in double racks doweled and screwed to the under side of the ram, affording a powerful and constant drive the full length of the maximum stroke. A bar or shaft 2½ in. in diameter can be passed under the ram when cutting keyseats or simi-

The next meeting of the Tri-State Mining Association, comprising lead and zinc mining interests, will be held in Dubuque, Iowa, November 22. A programme is being arranged, including addresses and papers on various technical, geological and practical subjects, and many prominent men will speak. The morning session, beginning at 10 o'clock, will probably be held at the Julien Hotel, at which time all the members are expected to be present and participate in a general discussion of mining affairs. It is intended to hold the afternoon session in the assembly hall of the Public Library, at which time the papers and addresses will be delivered. In the evening those in attendance will participate in a banquet. Each member and visiting delegate is requested to bring a small sample of ore or concentrates. James Dolan, Platteville, Wis., is president, and George Girling, Mineral Point, Wis., is secretary.

The Michigan Central tunnel under the Detroit River is making rapid progress, and it is said that before the end of the year the Canadian end will be completed and the last section of the steel tubes sunk in the river.

The Oil City Gas Engine Starter.

Gas, gasoline and oil engines have the disadvantage, as compared with steam engines, that they are not so easily started. If their size is small enough to permit it they can be temporarily disconnected from the machinery they drive and started by hand, but this becomes more laborious the larger the engine. Various schemes have been tried for starting such engines by compressed air, and these have their good points when they are properly handled. A new scheme is that brought out by the Oil City Gas Engine Starter Company, Oil City, Pa., which does the work by steam pressure generated in what is practically a flash boiler. It has this advantage over most compressed air starting arrangements that it can be used repeatedly if the first start fails to establish the operation of the engine because of incorrectly proportioned mixture of gas, failure of the igniter, or other cause. This starter has been used to give a gas engine as many as from 40 to 50 revolutions where the engine failed to pick up at once.

The device was experimentally introduced on the market some time ago, but has been more lately thoroughly remodeled and improved on the strength of experience had with the earlier forms. In its present form, illustrated in Fig. 1, the starter has been considerably simplified and perfected, so that it heats up in one-half the time taken by the older form. One of the principal

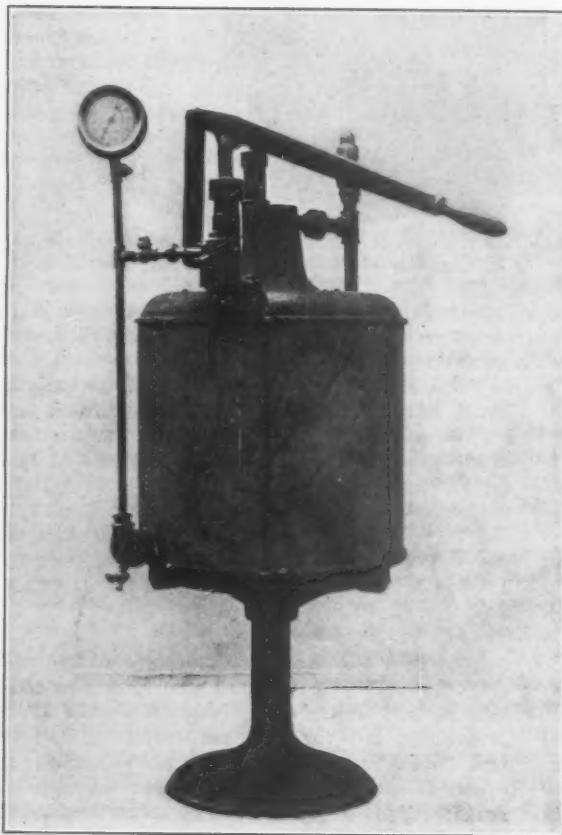


Fig. 1.—A Gas-Fired Steam Generator for Starting Combustion Engines, Built by the Oil City Gas Engine Starter Company, Oil City, Pa.

changes is in the boiler. Formerly the water heating coil consisted of two copper pipes, one within the other, with a small space between to spread the water over a large heating surface, so that it could be rapidly evaporated. Now the outer copper pipe is covered with an iron pipe and the ends are made tight, so that no steam can enter between the copper and iron pipe to cause rusting, and inside of the copper pipe is a solid iron core which nearly fills it, leaving a space of about 1-16 in. all around, so that a small amount of water, usually about 1½ pints, is thrown over a large intensely hot surface and is instantly converted into an almost dry vapor. This is collected in the dome, which is on the inside of the coil,

and is also heated by the same circular gas burner that heats the coil.

The remainder of the parts of the starter, all of which may be seen in the sectional view, Fig. 2, have to do with the introduction of the water and the discharge of the steam. The water injection pump, mounted at the side of the starter and shown in detail in Fig. 3, is operated by a lever, the up-stroke of which causes water to be drawn into the pump cylinder from a cup or bucket hung beneath the inlet, and the down-stroke forces the water through the small pipe at the side to the lower end of the heating coil. A gauge connected with an

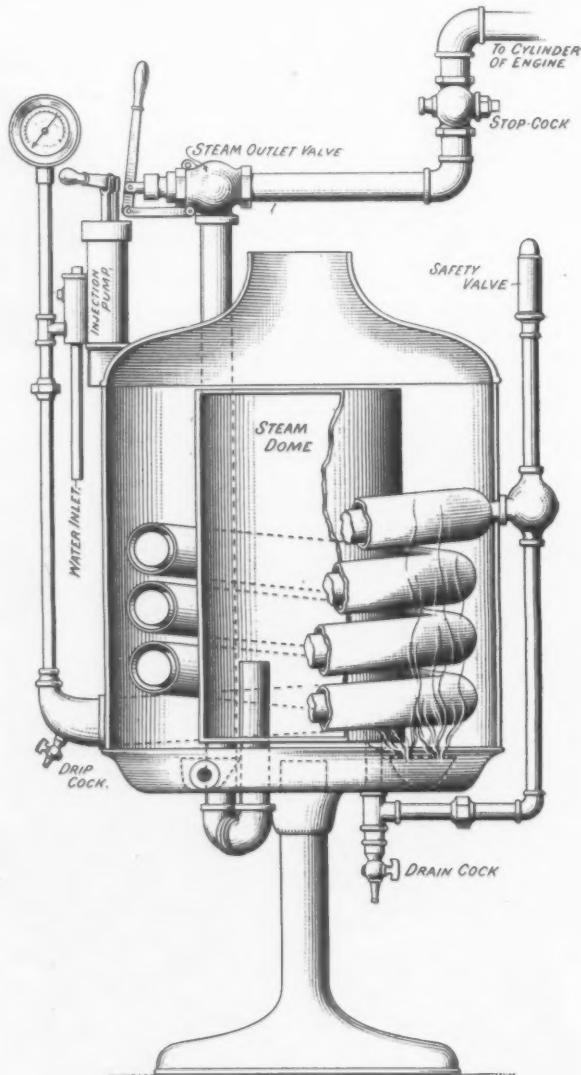


Fig. 2.—Sectional View of the Oil City Gas Engine Starter.

upper extension of this pipe, being in communication with the coil, indicates the pressure in the starter, and shows when enough water has been injected to give the pressure necessary to start the engine. On the other side of the starter an outside pipe connects the upper end of the coil with the bottom of the steam drum, and at its extended upper end has a safety valve which opens if a dangerously high pressure is created. Both of the side pipes have drain cocks for removing the water after the starter has performed its function. The steam outlet from the drum is a pipe inserted through the bottom to a height sufficient to insure the escape of only perfectly dry steam. This pipe is carried up at the rear of the starter and is surmounted by a quick opening lever valve, shown in sectional detail in Fig. 4. This valve is normally held closed by the pressure within the starter and may be intermittently opened at the right time in the cycle of the engine to give a number of strokes if necessary to establish the regular operation of the engine. After the engine is running on its gas or gasoline supply the stop cock in the steam admission pipe is closed to prevent waste of gas pressure through the starter.

In the operation of the starter the coil is first heated to almost a cherry red, then water is injected and instantly converted into steam, which, traveling through the coil, is superheated and passes in that condition into the drum. As before stated, the drum is also kept hot by the same flame that heats the coil, so that the steam has little chance to condense before it is needed by the engine. The steam outlet valve is placed as close to the engine as convenient, and is the only one with which the operator is for the time being concerned. Preparatory to starting, the piston of the engine has been set at the back end of the cylinder, with the crank just over the center of the impulse stroke, and the gas valve has been set

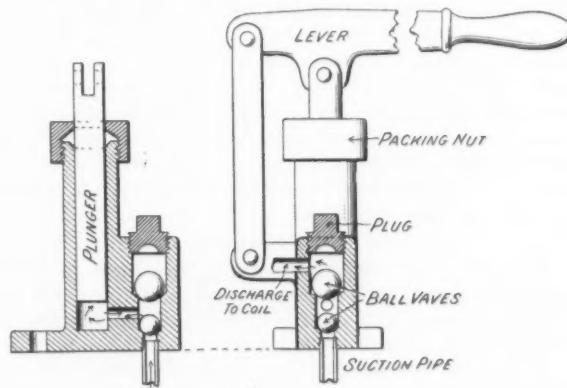


Fig. 3.—Detail of the Water Injecting Pump.

at the starting point. When sufficient steam has been generated the operation is as follows: The steam outlet valve is quickly opened for a short period allowing a portion of the steam to enter the combustion chamber of the engine, expand and force the piston forward on its impulse stroke with sufficient rapidity to keep the engine running for from 4 to 8 revolutions; in the meantime the cylinder has drawn in its charge of gas and air and takes up its own cycle. When the steam admitted to the engine has done its work it escapes through the exhaust of the engine in the same manner as the burnt gases after the explosions. If the first start fails to establish regular operation there still remains sufficient pressure in the starter to keep the engine running several more revolutions, but the lever valve must always be

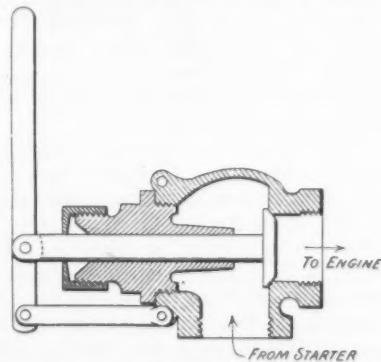


Fig. 4.—Detail of the Steam Outlet Valve.

opened when the piston is started forward on its impulse stroke.

It is preferable in connecting the starter to an engine to place it so that the operator can keep one hand on the pump lever and the other on the steam outlet valve lever. He is then enabled to operate the pump with one hand and keep up the pressure of steam, while admitting it to the engine with the other, and in this way it is possible to keep an ordinary engine running for from 20 to 40 revolutions before the coil becomes too cool to generate steam. Within 15 sec. after the coil of the starter is heated a pressure of 500 lb. can be obtained, although in practice such a pressure is not necessary. The coil, which is made by the Harrisburg Pipe Bending Company, and the dome are tested to withstand a pressure of 800 lb. The pop safety valve is set at some considerably lower pressure, usually 400 or 500 lb., so as to guard

against explosion. A high pressure is necessary to start a gas engine quickly and positively and this starter affords it.

A great advantage over air starters is that there is no stored pressure to escape by leakage, and after trying to start the engine two or three times unsuccessfully it is not necessary to stop and pump up more pressure. The starter is ready for repeated trials if the gas is off or something wrong with the engine, which makes it necessary to try more than once to start it. It is also claimed that the high pressure superheated steam, as used in this device for starting the engine, has the advantage over air that it cuts and blows out the carbon and keeps the rings in the engine bright and clean.

At present the starters are made in only three sizes, for 20, 20 to 35 and 35 to 50 hp., respectively. It is easily possible by enlarging the patterns of the coil and dome to make starters for any size of engine, and larger sizes will be made as soon as the demand warrants. They are adaptable to any make of engine. The company also builds upright four-cycle gas engines, from 1½ to 3½ hp., and horizontal two-cycle engines, from 5 to 30 hp. Both engines have been in use about five years, but have been improved upon and redesigned, and are now called the Starter Company gas engines.

Recent Customs Decisions.

Sheet Steel in Strips.

After a litigation covering several years, the United States Circuit Court of Appeals on Monday handed down a decision in the case of the Government against Hermann Boker & Co. of New York, regarding the classification to be accorded sheet steel in strips. The merchandise consists of cold rolled steel in coils varying from 50 to 200 ft. in length and $\frac{1}{2}$ to 6 in. in width, and being 25-1000 in. thick or thinner. It was held to be dutiable both under the tariff act of 1894 and also under the Dingley law, as steel in all forms and shapes not specially provided for. When the issue came before the appellate tribunal, the Government set up the contention that the strips should properly be returned for duty under the provision in the law for sheet steel in strips. The court, however, after a consideration of the arguments and the decisions of the Board of Appraisers and of the Circuit Court, finds against the Government and in favor of the claim advanced by the importer.

Screw Rods.

Judges Lacombe, Ward and Noyes sitting in the Court of Appeals at New York have reversed the Circuit Court in the case brought by George Nash & Co. to determine the classification of screw rods. The question was whether the screw rods which are made of iron wire are dutiable at the rates for iron rods "cold drawn or polished in any manner in addition to the ordinary process of hot rolling or hammering." The merchandise in the process of cold drawing incidentally receives a polish. The Government insisted that on this account the articles are properly assessable at higher rates. The Court of Appeals sustains this contention, and reverses the lower tribunal, and finds in favor of the Government.

Pro Forma Invoices.

A decision has been handed down by the Circuit Court of Appeals for the district of New York in the customs protest case of Muller, MacLean & Co. dealing with the question of pro forma invoices. It was held in the court below that where entry has been made on a pro forma invoice at a value that was erroneously stated too high, the duty might be assessed on the corrected value, though it appeared that the value stated in the pro forma invoice was approved by the appraiser. The latest decision takes an opposite view of the procedure to be followed.

Nickel Anodes.

Hermann Boker & Co., New York, have been defeated in the Court of Appeals in an attempt to secure the reduction of duty on nickel anodes. The lower court is affirmed in holding that the articles are taxable at 45 per cent. ad valorem as manufactures of metal rather than as nickel in bars or sheets.

The Duplex Steel Making Process.

A Proposed Arrangement of Plant.

BY B. C. LAUTH.

In view of the marked tendency toward the substitution of open hearth for Bessemer rails, a patent recently granted to T. S. Blair, Jr., of the Lackawanna Steel Company, on an arrangement for a duplex steel plant will be of interest to many readers of *The Iron Age*. First, a word as to the advantages of the duplex method over the straight open hearth plant for large tonnage, such as is required by the rail mill. The present open hearth practice has developed along the original lines laid out by Dr. Siemens and Mr. Martin, which made for quality and not for tonnage, with the result that as the requirements for output grow the open hearth plant becomes cumbersome. It depends too much upon the individual skill of a large number of men, just as puddling, for the same reason, outgrew its usefulness. On the other hand the great tonnage made possible by the duplex method, without deterioration of the quality of steel produced in the open hearth, brings it down to an operating proposition similar to the Bessemer process, where only a few really skilled men are required.

It provides great flexibility as regards the ores that can be used. The blast furnace department may be operated to its own best advantage, depending upon the mineral conditions that are encountered, practically without regard to the succeeding steps in the operation, because the converters have only to blow down the silicon and a part of the carbon to the desired point—for rail steel probably from 1 per cent. to 1.25 per cent.—to furnish the basic open hearth furnaces with an ideal metal for their operation to the best advantage. Imagine open hearth furnaces constantly supplied with iron devoid of silicon, of whatever carbon content they require, already at a temperature equal to that required for finishing a heat, and nothing to do but "clean up" the metal and dephosphorize. How many heats a day will they make under such conditions?

Drawbacks of the Methods Sluggish.

In the Bessemer method the blast furnace department is constantly struggling against the natural conditions to keep the phosphorus and sulphur down within the limits that can be used at all by the steel mill, and the steel mill is constantly operating against the untoward conditions of many casts from the furnaces which are too high in phosphorus, or in sulphur, or both, and the ever-present devil of oxide of iron in the finished steel, making it pipe and crack and do all the other things we do not want it to do, in other words, roll red short and show the most unaccountable tendency to fail in tests and show up unexpected flaws in the finished article. There is no mystery about these if carefully traced back to their origin. The method invites them.

In the open hearth method, as at present commonly practiced, the poor old blast furnace department finds another ever-present little red devil—silicon. It will not be ousted, and yet the vigilant basic open hearth man will not have it in his iron. We are all familiar with the open hearth superintendent's reasons for this. He must not have it if he is to do good work. And yet in most cases he is obliged to work up a very large amount of "off" iron, too high in either silicon or sulphur, because it cannot be disposed of otherwise, and so his department suffers in both tonnage (for these "off" heats both require a long time in the furnace to work down and tear the linings to pieces, often requiring many hours to get the furnace bottom in a condition fit to charge a heat upon) and in cost of operating, for the same reason. He has abnormal repairs with decreased tonnage.

Advantages of the Duplex Method.

In the duplex method the blast furnace superintendent can run his furnaces to the best advantage to fit the mineral conditions. The converters are relieved of all responsibility as to the points that heretofore have given the most trouble—phosphorus, sulphur and oxidation—

and the basic open hearth is relieved of all its troubles, chiefly silicon and acid slags, and has the metal delivered to it at the high temperature required for its work of purification.

All of these essential features seem to have been considered and provided for in Mr. Blair's design for the combination of the best features of the Bessemer and basic open hearth practice. In the first place, to take advantage of the great tonnage made possible by this method, some new means of getting the blown metal from the converters to the open hearth furnaces had to be provided, because the familiar way of taking the metal direct from the converters down the open hearth platform, either by means of overhead cranes or ladles on cars over the charging platform longitudinally with and in front of the open hearth furnaces, so interrupts the work on each furnace that a large part of the gain in tonnage is lost. The charging of each furnace so interrupts the operation of the other furnaces that the gain in output is insignificant. The same applies to the casting pit. The product of the furnaces, considered separately, cannot be taken care of, if they were producing what each is capable of under the new conditions.

Features of the Proposed Plant.

In the design presented here, a plan view of which appears in Fig. 1, several features are distinctly novel and absolutely essential to the utilization of the advantages offered by the duplex method.

1. The converters are placed at an elevation that permits of their discharging the blown metal into ladles on cars at the level of the open hearth charging platform, and the arrangement of tracks for these ladle cars to deliver the blown metal from the converters to the open hearth furnaces is such that each furnace is operated quite independently of, and without interfering with, any other furnace, so that each furnace may be worked to its own full capacity.

2. The same conception, that of making each furnace unit completely independent of every other, is carried out in the casting pit. The pouring platforms extend coincidently with the spaces between the furnaces and transversely of the pit, with branch tracks for the mold-carrying cars, leading to a track which will take them to the ingot strippers or mold yard. By this arrangement the product of each furnace may be handled without regard to the work of any other furnace, thus enabling unhampered disposition to be made of the product of all the furnaces, however great it may be.

3. The open hearth furnace employed is especially designed to fit the conditions: Great tonnage, with all the metal of the charge delivered to the furnace molten and at a high temperature, free from silicon, and having the desired carbon content to provide the necessary "boil" for the operation of dephosphorizing and cleaning the bath of oxides. The furnace is very long in the hearth—60 ft. between ports—with a bridge wall, chilled as shown in Fig. 2, in the middle of it, dividing it into two hearths 30 ft. long each, so that two 60-ton heats will be finished with the same labor, and approximately the same fuel, as is required for one 60-ton heat in the customary operation. This dividing of the 120-ton hearth area is done for the purpose of reducing the cost of installation of machinery to handle the product and to take advantage of the fuel economy in very long hearths. The two baths of metal will be treated as one heat, charged and tapped practically simultaneously.

4. The storage and delivery to the open hearth furnaces of all materials other than iron provides economical and prompt handling. All refractories and supplies of every sort are stored at one end of the open hearth building, and in such position as to provide a bottom house for the converters, and thence delivered by means of a belt conveyor to small bins at the back of the charging platform, thus keeping all such supplies off the charging platform, but in constant supply at the furnaces, and leaving the floor in front of the furnaces clear of everything but the furnace tools.

Experimental 50-ton heats have been made in 1½ hr. Allowing 4 hr. per heat, for bottom delays, &c., each of the furnaces will produce 720 tons per 24 hr., and they will probably actually produce at least eight heats a day,

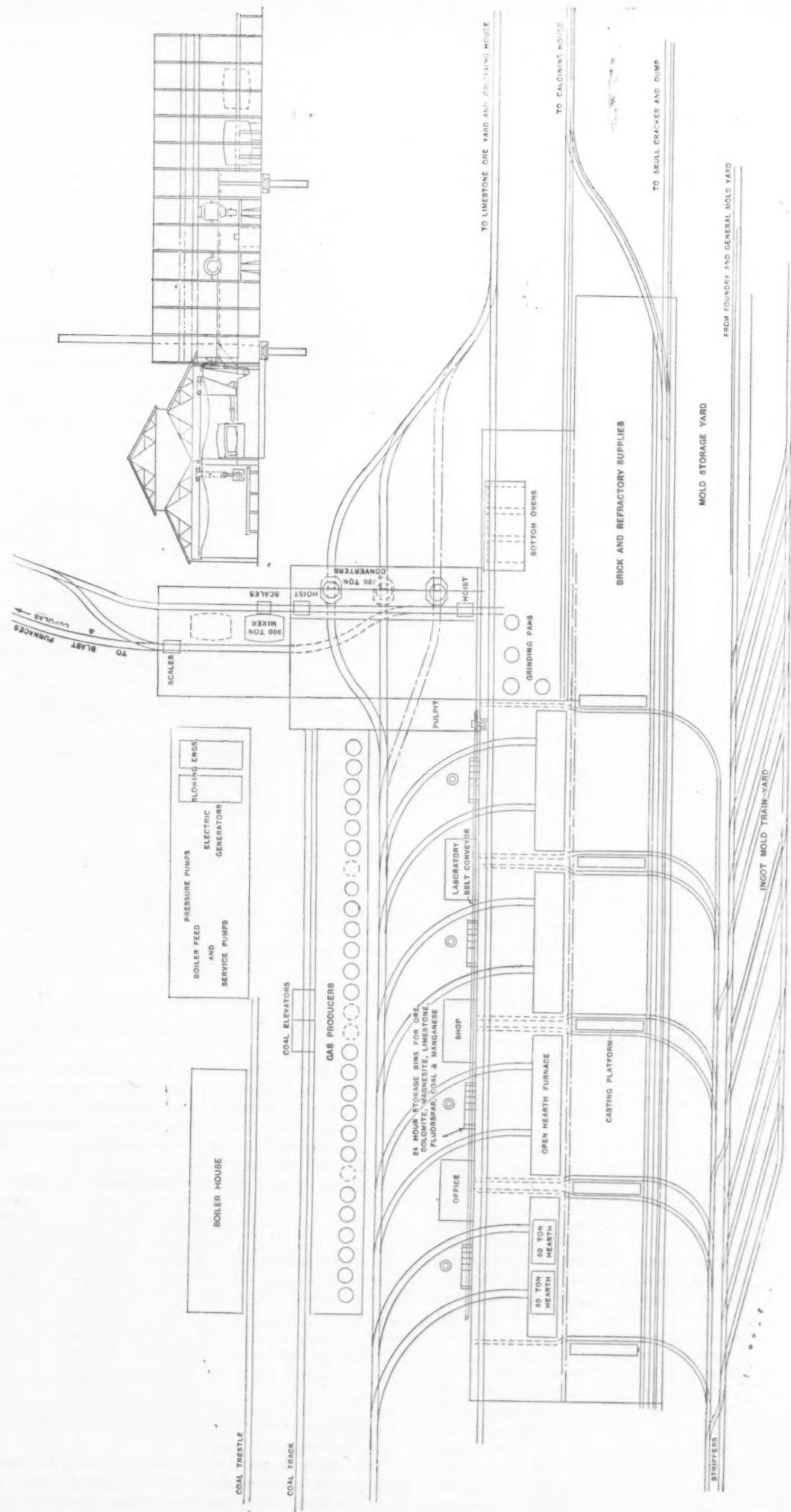


FIG. 1.—Proposed Plan for Duplex Steel Works, Arranged so as to Secure Independent Operation of Each Open Hearth Unit.

or 960 tons. But assuming the former figure, we have a plant something like this:

Two 20-ton converters, with a third converter for accidents and repairs if you wish. At 15-min. cycles = 8 heats = 160 tons an hour = 3840 tons a day = 99,840 tons a month capacity.

Four open hearth furnaces at 120 tons a heat (divided into two 60-ton heats) at 6 heats a day = 2880 tons a day = 86,400 tons a month—say, 80,000 tons a month.

Such a plant will cost, approximately, \$1,500,000. An open hearth plant built on the present lines, to produce this tonnage, will cost approximately \$5,000,000 and will cost fully twice as much per ton as the above to operate.

Again, to increase the capacity of this plant 50 per cent., to, say, 120,000 tons per month, will cost only two more open hearth furnaces, and their equipment of machinery and building, about \$400,000, the converters being easily capable of furnishing the blown metal for the additional requirement.

Under this arrangement no spare open hearth furnaces are required for repairs if the Blair patent indestructible port is used, as shown on the left of Fig. 2, a description of which was given in *The Iron Age* of November 7, 1907. This has been proved out at the Lacka-

one exception this is the only type in which large units are being built in this country to-day.

The gas engines built by the Wisconsin Engine Company bear some of the distinctive features of its large Corliss engines, and utilize in design most of the Sargent patents. The design is remarkably simple and embodies features which are of considerable interest to the engineer and power user, as follows: There is but one poppet valve for each explosion chamber, and as this is located on the bottom of the cylinder, the cumbersome and unsightly air and gas pipes, as well as the stairs, galleries and railings found on most horizontal tandem engines, are entirely eliminated; provision is made for preventing the dangerous pressures caused by possible pre-ignitions, and the engines are started automatically. Tests of even small Sargent engines show a heat consumption of less than 9000 B.t.u. per brake horsepower hour.

This company has recently shipped some large steam engines to such concerns as the Illinois Steel Company, Jones & Laughlin Steel Company, Packard Motor Car Company, American Sheet & Tin Plate Company, Amoskeag Mfg. Company, New Hampshire Spinning Mills, National Tube Company, City of Milwaukee, Carnegie

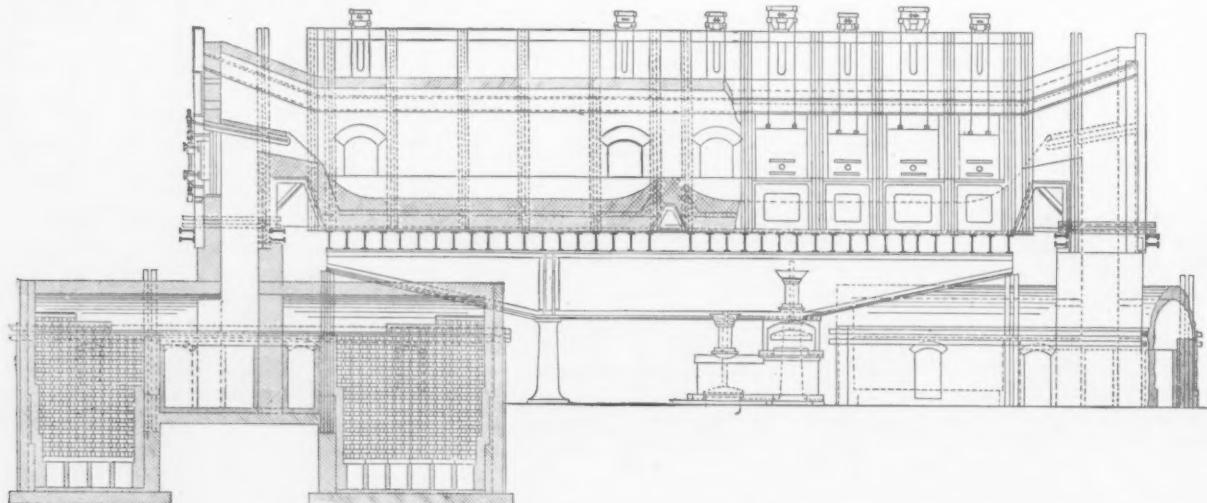


Fig. 2.—Elevation, Partly in Section, of Open Hearth Furnace with Bridge Wall in the Middle, Also with Blair Indestructible Port.

wanna Steel Company's Buffalo works, and no open hearth furnace of any type whatever need go out for a general repair again if this port construction is used. A roof, back or front wall can be replaced any Sunday when the furnace flues are being burned out. About once a year the checkers will have to be replaced, which requires about 48 hr., but if advantage is taken of the Sunday burning out, only about 36 hr. of steel producing time of the furnace is actually lost, once a year.

Another Manufacturer of Large Gas Engines.

As an indication of the rapid development in the manufacture of large gas engines, it is of interest to note that another manufacturer of large Corliss steam engines has entered the gas engine field and is bidding strongly for engines in medium and large sizes. The Wisconsin Engine Company, Corliss, Wis., which has built some very large and successful steam engines, is building gas engines for all services in sizes from 400 to 5000 hp. The engines utilize natural gas, producer gas, coke oven gas or blast furnace gas in the Otto cycle (4-cycle), and are of the horizontal tandem and twin tandem double acting type. This company controls the Sargent patents on internal combustion engines, and has employed as the engineer of its gas engine department Charles E. Sargent, who in 1898 designed the first horizontal tandem double acting gas engine. This was a wide departure from the accepted practice of those days, when the most prominent manufacturers of gas engines declared such a type was impracticable and doomed to failure. The largest and most successful gas engines, however, are of the horizontal twin tandem double acting 4-cycle type, and with

Steel Company, American Woolen Company, United States Envelope Company, and Carnegie Natural Gas Company, and has built up an exceptional reputation for shipping on time. It promises to do as well on gas engine orders.

The World's Petroleum Production.

The following table, taken from an advance chapter from "Mineral Resources of the United States, Calendar Year 1906," on the production of petroleum in 1906, by W. T. Griswold, of the United States Geological Survey, gives the figures of the world's production of crude petroleum for the last three years:

Country.	World's Production of Crude Petroleum, 1904-1906.		
	1904. Barrels.	1905. Barrels.	1906. Barrels.
United States.....	117,080,960	134,717,580	126,493,936
Russia	78,536,655	54,960,270	59,043,829
Sumatra, Java and Borneo	6,316,169	7,334,310	7,399,024
Galicia	5,947,383	5,765,317	5,467,967
Roumania	3,599,026	4,420,987	6,378,184
India	3,385,468	4,137,098	4,015,903
Japan	1,418,767	1,341,157	*1,341,157
Canada	552,575	634,095	569,753
Germany	637,431	560,963	579,101
Peru	49,524	37,720	42,419
Italy	25,476	44,027	*50,000
All others.....	40,000	*30,000	*30,000
Totals.....	217,589,434	213,983,524	211,411,173

* Estimated.

The slight decrease in production noted in 1905 as against 1904 is shown also in 1906 as against 1905. This is due in 1906 chiefly to the decrease in output in the United States.

A New Ferracute Redrawing Press.

A horizontal double ended screw press adapted for redrawing sheet metal tubes and shells from 1 to 6 in. diameter and 18 in. deep, designed by Oberlin Smith and built by the Ferracute Machine Company, Bridgeton, N. J., is shown in the accompanying illustration. By using the automatically swinging punch shown at the left end of the press, a depth of 24 in. can be obtained. The double ended construction allows the return stroke to be utilized, giving double the capacity at a slightly increased outlay, by providing an operator at each end.

A special feature of this press is the gravity feed afforded through the inclined trough near the right of the machine. This trough is adjustable sidewise to suit work of various lengths and a slight rotation in a vertical plane adapts it for different diameters of shells. An adjustable block accurately gauges the position of the shell, thereby preventing uneven drawing. It is provided with an automatic "let off" device for delivering the lower shell in the feeder to the punch at the proper time. The clutch shaft contains two friction clutches, one for each direction, giving positive control when operating

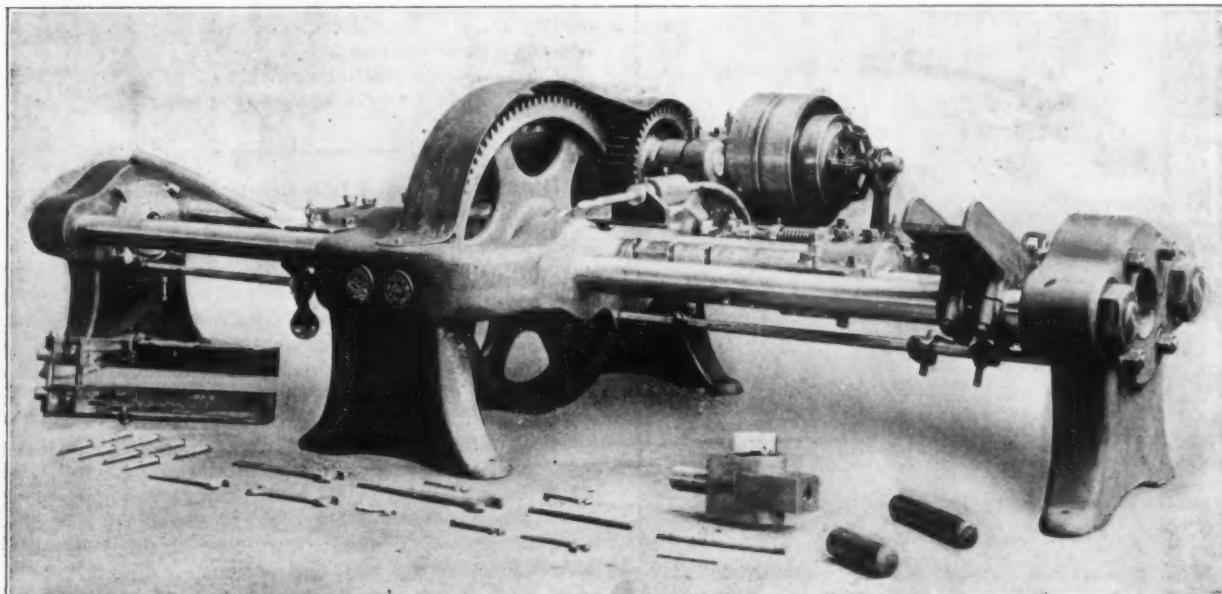
No. D375, is 16 ft. long, 6½ ft. wide, 4 ft. high, and weighs about 15,000 lb. It was built for the French Government for drawing heavy cartridge shells for cannon. Included in the order were three upright crank presses with dial feeds for the earlier operations upon the shells.

The Steel Corporation's Stock Exchange Statement.

The United States Steel Corporation in its application to the New York Stock Exchange for the listing of \$30,000,000 additional sinking fund gold bonds, given in payment for the 252,000 shares of the Tennessee Coal, Iron & Railroad Company common stock, recently purchased by the corporation, states that in addition to the above 252,000 shares of the Tennessee Company stock purchased it had acquired to November 11, 10,729.6 shares of additional common stock, full paid subscription receipts for 2017.5 shares of common stock and 20 per cent. paid subscription receipts for 5249.25 common shares.

The balance sheet of the Steel Corporation as of June 30 last is submitted, from which the following statement of surplus is taken:

Capital surplus provided in organization, \$25,000,-



A Double-End Screw Press Designed and Built by the Ferracute Machine Company, Bridgeton, N. J.

either way. The shifter rod carries adjustable collars or stops by which the length of stroke is regulated.

The press is of simple design, consisting in the main of massive castings connected by 5-in. steel rods which take the tensile stresses, and at the same time act as slide bearings for the cross heads, guiding the screw and preventing all lateral motion. This design allows the construction of presses of different lengths to suit work of greater or less depth. The steel screw is 6½ in. in diameter, and is driven by a phosphor bronze nut set in the center of the main gear. The friction of the thrust is reduced by roller bearings. Oil cups are provided on the slides and shaft journals and the gears are protected by sheet metal guards.

The press can be run continuously or intermittently as desired, the operator being able to stop or start the press at any portion of the stroke by means of the shifter. A pressure of 100 tons can be exerted when the press is driven at a speed of 700 rev. per min. of the clutch shaft, but, for continuous work, 600 revolutions will be sufficient; at this speed the screw has a horizontal motion of 15 ft. per minute.

The company also builds an upright screw press for similar work, but which does not have the advantages of the double end and gravity feed features. It contains, however, a device for quick return of the screw which effects considerable saving in time. The horizontal machine can be built single ended if a large output is not essential. The press illustrated is designated as

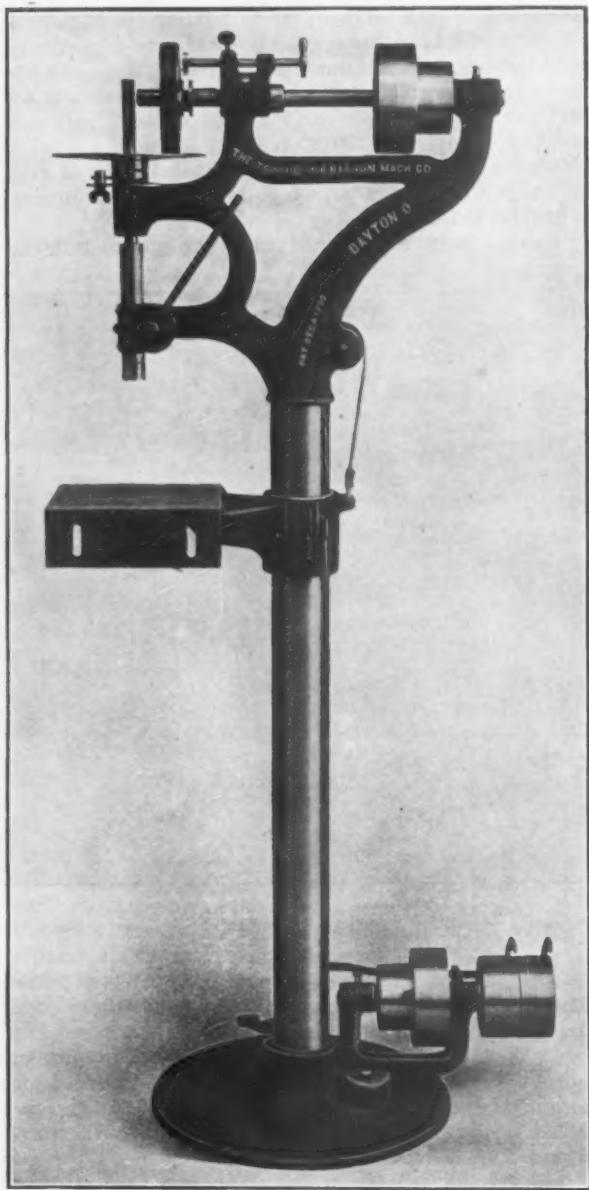
000; balance of surplus accumulated by all companies from April 1, 1901, to June 30, 1907, \$61,738,311; total surplus exclusive of subsidiary companies' inter-company profits in inventories, \$86,738,312; undivided surplus of subsidiary companies, representing profits accrued on sales of materials and products to other subsidiary companies, on hand in latter's inventory, \$17,049,442; total surplus, \$103,787,754.

The income account of the Tennessee Coal, Iron & Railroad Company for the nine months to September 30 last follows: Net earnings from operations after deducting all charges for current repairs and maintenance, \$2,266,510; other income, \$65,794; total income, \$2,332,304; less interest on bonded debt, dividends on guaranteed securities and other charges, \$602,283; net profits, \$1,730,021; less depreciation, \$293,467; interest on common stock subscription payments, \$57,362; net income, \$856,023.

Russia's vast annual financial requirements are shown in the Government budget presented last week to the new Duma. The total expenditure for the empire for next year is placed at \$1,257,500,000, and the ordinary receipts at \$1,159,000,000. The acknowledged deficit is \$94,500,000. The increase over last year for the army and navy is set down at \$28,500,000, for railroads \$5,000,000, for education \$3,500,000, for agriculture \$6,000,000, for postal communication \$1,500,000, for the public debt \$7,000,000 and for other purposes \$6,000,000.

The Excelsior Friction Driven 15-in. Drill.

The manner of obtaining speed variation is the feature of principal interest in the Excelsior sensitive drill herewith illustrated and made by the Tschudi-McBarron Machine Company, Dayton, Ohio. The upper horizontal shaft is driven from the countershaft mounted on the base of the drill by two-step cone pulleys, allowing two main series of speeds, and a continuous range of intermediate speeds is obtained through the friction drive between the upper horizontal shaft and the drill spindle. The driving wheel may be shifted toward or from the center of the driven disk by means of a rod at the top



A 15-In. Sensitive Drill with Friction Drive Built by the Tschudi-McBarron Machine Company, Dayton, Ohio.

and is securely held in any position by a thumb screw. An adjustment is provided under the driven disk to vary the pressure between the driving wheel and the disk, according to the power it is desired to transmit. The friction disk runs on a ball bearing hub, and the spindle has a ball bearing thrust collar to reduce friction and insure smooth running. The driving wheel is built up of paper clamped between metal plates, and is claimed to last a long time, to be easily replaced and to be practically impervious to oil, which avoids slipping of the wheel on the disk. For large drills and tools the spindle is run at its slowest speed, and at this time the driving wheel is set at the outer edge of the disk where the greatest turning effort of the spindle is obtained.

The table is counterbalanced by a weight in the hollow column, and is easily raised or lowered or swung to either

side. At any of its positions it may be clamped to the column by a handle nut on the side of the table bracket. The column is graduated its full length in a vertical line, and this makes it possible to set the center of the table in line with the center of the spindle at any point of the vertical adjustment. A vertical leg on the side of the table is provided for clamping work to be drilled on the edge, and does away with the need of a separate angle attachment for the table. The bearings of the driving shaft have hardened phosphor bronze replaceable bushings, and special arrangements are not necessary to keep them in line. The spindle is of special carbon steel, and all parts of the tool are made to jig and are interchangeable.

The greatest height from the base to the spindle is 40½ in., and the greatest height from the table to the spindle is 33½ in. The column is 3½ in. in diameter, and the table 10 x 10 in. The distance from the column to the center of the spindle is 7¾ in., which makes it possible for the machine to drill to the center of a 15½-in. circle. At its smallest diameter the spindle is ¾ in. in diameter, and the lower end is provided with a No. 1 Morse taper socket. Drills up to ½ in. may be used. The speeds of the spindle vary from 200 to 1500 rev. per min., when the countershaft is driven at 350 rev. The base of the machine is sometimes made rectangular, 12 x 20 in., or circular, 19 in. in diameter, as in the style illustrated. The complete weight is 245 lb.

The machine is entirely capable of using high speed steel drills, and has the necessary speed range and the required power.

Milliken Brothers, Ltd., Doing a Good Business.

Since assuming the management of Milliken Brothers, Ltd., New York, the receivers have taken a large tonnage of structural contracts and have carried on the work already in hand in an eminently satisfactory manner. Contracts have been executed promptly, and new ones made have kept the plant on Staten Island in full operation. The finances of the company are in shape to handle the large amount of work being received, of which there is sufficient on the books to take its capacity well into February, and instead of reducing its working forces it is taking on additional hands. All through the depression in trade a good business has been transacted, particularly since the first of the month, during which time contracts have been closed for 8600 tons of structural material.

In view of the possible falling off in structural work for buildings, bridges, &c., the company has taken up the construction of steel towers for carrying electric cables and wires, and has within the past few days closed a contract with the Great Western Power Company of California for steel towers covering 2400 tons of material. In addition, the receivers' report shows the following tonnage taken since November 1, most of it during the past week: A large hotel in New Orleans, La., representing an investment of \$500,000, the steel for which amounts to 1100 tons; Masonic Hall, New York, 2500 tons; building in San Francisco, 2200 tons, and several small jobs around New York, including work for the Interborough, Pennsylvania and New York Central railroads, amounting to 400 tons. The erection work on the hotel in New Orleans will be done by the company.

All steel box cars are to be given a trial by the Union Pacific Railroad Company. If approved, this style of box car construction means an increased consumption of steel. The Pressed Steel Car Company, Pittsburgh, is building the experimental cars, which will weigh 14 tons against 20 tons' weight of wooden cars of the same capacity.

The exodus of foreign laborers to Europe is assuming large proportions. The steerage of every steamship leaving New York is now being crowded to its capacity. It is estimated by steamship men who have studied the conditions that fully 500,000 steerage passengers will leave America this season. Many will return, of course, when business improves.

New Drill Sockets and Lathe Dogs.

A new device designed to obviate the breakage of tangs on taper shank drills, reamers, taps and like tools, and to secure greater accuracy in their use, is the socket holder here illustrated. A line of these has just been brought out by the Universal Tool Company, 47 South Desplaines street, Chicago, which was organized a few months ago to manufacture special tools and tool holders under patents held by J. M. Palmer, superintendent of the company.

In the drill socket offered, the tang hold is supplanted by a depressed key, fitting a specially milled keyway in the shank of the drill, as shown in the cutaway view of the socket presented in Fig. 1. The darkly shaded part

saving effected by this manner of operation is obvious.

The features of the Universal steel lathe dogs shown in Fig. 4, for which particular merit is claimed, are the rectangular openings, the adjustable bridge and the screw bearing. By using the bridge, in conjunction with the screw, round, square, flat or other shaped material of any size within the capacity limits of the dog can be firmly held and driven. The screw is extra large and is steeled by a smooth bearing below the thread at the point of greatest strain. A bar of $\frac{5}{8} \times 1\frac{1}{2}$ in. flat steel is shown clamped in the left hand dog in Fig. 4. These dogs are made in all the usual sizes.

The adjustable clamp, Fig. 5, which is designed for heavy service, has a capacity range of 3 to 8 in., and is provided with a tongue grooved brace to relieve the bind-

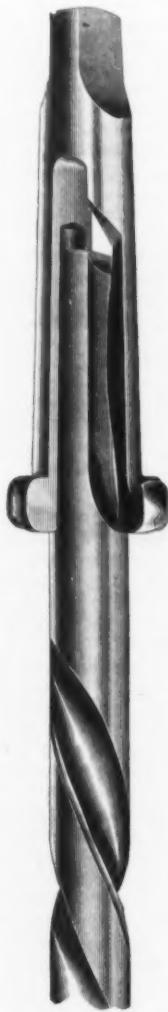


Fig. 1.



Fig. 2.

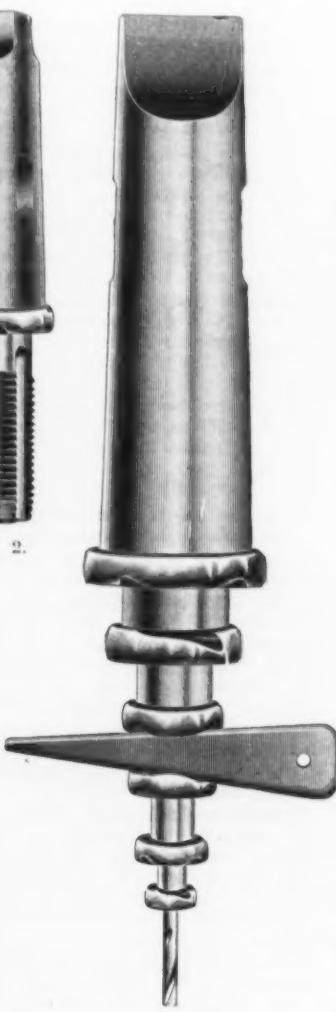


Fig. 3.

Keyed Sockets for Drills, Taps, &c., Made by the Universal Tool Company, Chicago.

indicates the form and position of the key, which, it will be seen, has a long bearing, insuring a rigid hold on the drill and a straight, positive drive. The same advantages obtain in straight hole sockets for driving straight shank reamers and taps. Fig. 2 shows the socket applied to a tap.

Instead of refitting the shanks of broken tanged drills by machining them down in the usual way, they may with small expense be mill grooved to fit the keyed socket, in which they are as serviceable as new tools. To conform as nearly as possible to the milling facilities of the average shop, a standard keyway has been adopted which can be cut with tools usually at hand. For example cutters of 10, 6, 5, 4 and 3 pitch, mill shanks for the Nos. 1, 2, 3, 4 and 5 sockets, respectively. The company is prepared to keyway old tool shanks or furnish new tools to fit the sockets at moderate cost.

Fig. 3 clearly demonstrates the means for separating nested sockets without taking them all apart. The time



Fig. 4.—The Universal Steel Lathe Dog.

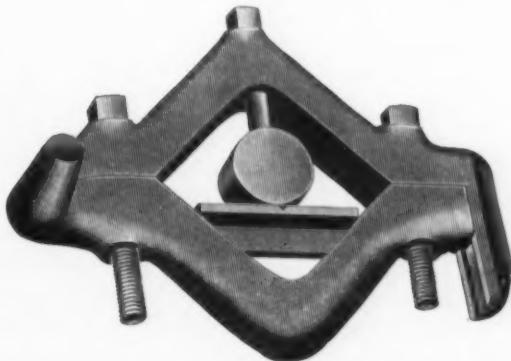


Fig. 5.—A Special Adjustable Clamp Dog.

ing screws of driving strain. On rounds above 6 in. in diameter five points of contact are furnished by the four sides of the frame and the clamp screw. This dog is made with single bent, single straight, or double straight tails.

The American Shipbuilding Company shut down its Lorain yards last week and made large retrenchments in its working force in its Cleveland and other yards. The directors issued a statement in which they said that owing to the stringency of the money market and the present uncertainty of general financial conditions throughout the country they thought it wise to curtail expenses by temporarily suspending construction wherever possible, not, however, including repair work or work on steamers nearly completed. The directors also decided to defer, for the present, the payment of the December dividend on the common stock. The company has enough orders for boats to keep all its yards employed until the opening of navigation next spring, nine of which are to be built at the Lorain yards. With this large amount of work on hand it is believed that the partial shutdown will be only for a short time.

A new star was added to the flag November 17 by the admission formally into the Union of the State of Oklahoma.

The National Founders' Association.

Its Eleventh Annual Convention Marks a Constructive and Educational Period.

The attendance at the eleventh annual convention of the National Founders' Association at the Hotel Astor, New York City, November 13 and 14, was larger than might have been expected, considering that the exigencies of business kept many members at home who had planned to attend. The total registration was 221. This number was exceeded last year, but that convention was held when interest in the strike developments of 1906 was at its height. Last week's convention was quiet in comparison, the issues of last year having been settled to the satisfaction of the foundrymen. The contrast with conditions of the preceding year was brought out strongly in President Briggs' statement that but one strike had occurred in the jurisdiction of the association in the six months preceding the convention.

The discussions of the two days' sessions dealt to a very small extent with strikes. Practically the only aggressive measures considered were those presented by the attorney of the association in his discussion of the legislative side of the association's work. Apprenticeship and the training of young men in the molders' trade received a large share of attention. The educational work of the association was also emphasized—that is, the work that should be done by distribution of literature and otherwise in cultivating among employees a right view of the relations between employer and employee. Some time was given to the consideration of benefit and insurance provisions in which employers and employed should co-operate, this as a means of giving the employee a substitute for the benefits of union membership.

The whole tone of the convention reflected the evolution in foundry conditions that has made employers increasingly independent of the Molders' Union. It showed also the recent change in business conditions and the confidence of the membership that the advance made in the past year in overcoming union efforts to restrict output and control the instruments of production would be carried even farther in the year to come.

President's Report.

From the thorough review of the association's work presented by President Briggs, liberal extracts are made below, other portions of the report being given in synopsis:

The contrast in the labor conditions of our foundries this season, as compared with the season of 1906, is most pronounced. Last year was the stormiest period in the labor branch of your foundry industries since the organization was formed, and the present year closes with the most peaceful conditions obtaining during the same period of 11 years. For the first time in these 11 years, it has not been necessary to call your council together during the entire period from February to the close of the year. During the past six months but one new strike has occurred in the membership of our association. All strikes of an earlier date some time ago arrived at the point where no financial assistance has been necessary.

STRIKES SUCCESSFULLY RESISTED.

The principal feature of our last convention was reviewing the record of our complete and unconditional victory in combating the most severe strikes ever witnessed in our foundries. The first half of this season was devoted largely to combating the aftermath of those great strikes, together with a limited number of additional strikes. The last half of the season has been devoted to a general survey of the situation, a study of the labor conditions, and an effort to prepare ourselves for a more thorough understanding of the work necessary for the future.

The entire experiences of the season more than justify our claims of one year ago, as well as the statement I have often made to you, namely, that the enormous labor difficulties forced upon our membership were due entirely to the unreasonable and drastic methods of a union whose entire strength, financial and otherwise, was exerted for the purpose of benefiting the inferior and undesirable workingman in its ranks, to the detriment of the superior and competent men; a union whose arrogance for years prior thereto forced us in 1904 to announce the principles upon which this association would stand and defend its members who applied for support in establishing these principles.

I believe that no man, or organization of men, ever made a greater effort to establish the proper relations between employer and employee through the medium of negotiations with the union officers, than this organization made from 1897 to 1904. This convention marks the successful establishment of the principles contained in our outline of policy, and the occurrences of the year prove that with the kind of unionism characterizing the management of the Iron Molders' Union during all these years, successful negotiations with its leaders for the mutual benefit of employer and employee are impossible.

WORK AHEAD OF THE ASSOCIATION.

It is incumbent upon us to devise methods for preventing a recurrence of these unwarranted strikes. Now that an equitable policy of dealing with our men is established, the real work of the association has just begun. I therefore present the following for your consideration:

1. Let us turn our attention to maintaining law and order, and such legislation as is necessary thereto.
2. Educate the people, non-manufacturers, employers and employees alike.
3. Continue to foster and improve our relations with our employees.

Our first undertaking should be to cause the laws of this country to be enforced in prohibiting: 1, The labor trust's limitation of apprentices; 2, picketing and boycotting. The present is a most opportune time to invoke the power of our government, national and State, to disrupt this apprentice trust. All other trusts amount to nothing in comparison with that trust which allows but one of our boys to learn a trade out of a dozen who desire to do so, and whom the proprietors are ready to educate; the trust that forces good mechanics to produce but one unit in the same time in which they should produce from two to five units of a given commodity.

THE UNION PROGRAMME OF VIOLENCE.

In referring to these unions in this connection I draw a distinct line between the unions of the American Federation of Labor, 118 in number, and the open shop unions, composed of such organizations as the Brotherhood of Locomotive Engineers, the Conductors' Union, the United Railway Trainmen and the Amalgamated Society of Engineers of England. The American Federation of Labor unions are always in trouble, while the so-called brotherhoods or railway unions have seen no trouble of any great significance since 1894, a period of 13 years. For the latter class of unions I have the very greatest respect and admiration. For the tactics of the former class I have no respect whatever.

That the American Federation of Labor unions stand for and seek to establish their trust by the unlawful methods of coercion, intimidation and violence, is demonstrated in every State in the Union. In the Cincinnati molders' strike for a closed shop, one Wm. Patton, alias "Friend," a striker and one of the strike committee helping to engineer affairs locally under the direction of the National Iron Molders' Union, whose office is in that city, murdered a man named Weakley. Patton was caught almost in the act, was arrested, pleaded not guilty, and was indicted for murder in the first degree. A tremendous amount of energy, time and money was expended in bringing the light to bear upon his trial. As the eleventh juror was about to be accepted Patton was allowed to change his plea to guilty of manslaughter. He made a clean confession of having murdered Weakley in cold blood. He was sentenced to 20 years in the Ohio Penitentiary, the limit the law provides for this offence. This occurred in 1905. Two years and four months after we find this murderer on the streets of Cincinnati, having been paroled by the State Board of Pardons, at the instigation of the officers of the Iron Molders' Union of North America, we are informed and believe. The action of this board is a fair illustration of these union methods and of how too many of our men in office are led to defeat the ends of justice by the subtle influence of this kind of unionism.

Incidentally, I suppose there is no way to rescind this parole, and such being the case, I recommend to this convention that you pass resolutions denouncing this act of the Ohio State Board of Pardons and the Iron Molders' Union, naming in such resolutions each member composing that board, also publishing the facts to the greatest extent possible. The union defended the murderer, paid the bill and I believe secured his parole.

THE UNION CAMPAIGN AGAINST LEGISLATORS.

I refer in the second place to the campaign of terrorism to officeholders, adopted by the American Federation of Labor in attempting to defeat the ends of justice in our national and State Legislatures. For the last four years

this Federation has been knocking at the doors of Congress, not merely requesting but demanding that it enact special legislation favorable to the labor trust. Having been defeated in this it has turned its entire force into the political arena, and is now attempting to coerce our statesmen and the public generally.

It has demanded of the House Judiciary Committee for the last four years anti-injunction legislation, which legislation had for its purpose making strikers exempt from the law or from restraint at the hands of the courts. The ultimate object can be no other than an attempt to legalize all forms of strikers' tactics, including picketing, which carries with it coercion, intimidation, destruction to manufacturers' property and business, and violence against the independent workingmen, even to the extent of murder. This Federation would have the world believe it stands for law and order. If it is sincere in its claims, why has it never been known to assist the administration in bringing these murderers and criminals to justice? Such an undertaking is not to be found in the annals of the American Federation of Labor. Were it honest in its claim, it would also seek out such men as Congressman Littlefield of Maine, himself a self-made man, rising from the ranks of the so-called workingman, to espouse their cause in Congress. On the contrary this labor trust has devoted its greatest energy and expended vast sums of money to defeat him, simply because he stands for honest and impartial legislation.

I refer to these two instances only, in this report; time permitting, volumes could be written on similar cases.

AGAINST WAGE DIFFERENTIALS.

That the real intent of these unions is to combine and legislate for the benefit of the inferior classes, is indicated by the following resolution passed at the Iron Molders' Union convention recently held at Philadelphia:

Resolved, That the incoming officers use their best endeavors to eliminate the differential in the molding industry.

How does that resolution dovetail with the stock claim of the union leaders that their organizations are formed to see that the poor workingman receives his just proportion of the fruits of his labor?

MAKE UNION RESTRICTIONS UNLAWFUL.

We are informed by eminent lawyers that organized labor has no right whatever to limit apprentices, picket the plants of our manufacturers and the homes of our workmen, or apply the boycott. We occasionally find judges who attempt to classify these methods and permit what they have termed "peaceful picketing." That there is no such thing, and by the very nature of things, can be no such thing as "peaceful picketing," is very well known to every employer who has had a strike. You may as well describe the battle of Gettysburg as "peaceful warfare," as to call any form of picketing peaceful.

Upon these questions of picketing, boycott and apprentices, we have some splendid decisions from our courts, all of which have been of great benefit; but at best they are scattering in their effect, and in spite of them these ruinous and illegal practices continue, and will continue in a greater or less degree until the strong arm of the government puts a stop to them. Can it be possible, in these days of trust investigation, that our Congress and administration would refuse to stamp out this evil, if the case were properly presented to them?

Right here lies the difficulty: We do not keep our representatives in Congress posted as we ought to. They are swamped with the arguments of the labor agitators, but seldom see a proprietor to present the other side of the case. It is our duty to post our Representatives and officers in every branch of our government; and if we do apply this means of enforcing the proper laws with the energy and force characteristic of this association, I cherish the hope that such undertaking may ultimately result in more efficiently maintaining law and order.

If the Government once declares itself in positive terms applicable to every corner of its territory, it will disarm these radicals of one of their greatest weapons, relieve the independent workmen and employers of an everlasting menace to their welfare, besides throwing all of our shops open to the rising generation for a free and unrestrained mechanical education.

FRUITS OF THE COAL STRIKE FINDINGS.

The address then took up the famous section 9 of the finding of the Anthracite Strike Commission, providing that "no person shall be refused employment or in any way discriminated against on account of membership or non-membership in any labor organization, and there shall be no discrimination against or interference with any employee who is not a member of any labor organization, by members of such organization." This finding of the commission, which comes close to being a Government declaration, represents, it was stated, just what every employer of labor desires to see established.

The question is how to go about making this finding operative in our various industries. President Briggs suggested that State and National Governments might be petitioned by employers of labor to adopt the open shop policy as the basis of industrial operations. Or a campaign might be made for the passage of legislation in harmony with the Anthracite Strike Commission's findings. Another method was to press for decision in the Supreme Court a case involving picketing, in the hope that that tribunal would hold all picketing to be illegal. Or, a case might be made up on the apprentice restrictions of the union, on the contention that the "apprentice labor trust" is a violation of the Sherman Anti-Trust Act. With picketing eliminated the union would be deprived of its chief weapon for the enforcement of its apprentice regulations. When intimidation ceases thousands of boys of a mechanical bent will seek the skilled trades.

Government statistics show that next to demands for increased wages, the most fruitful cause of strikes has been demands for recognition of the union. Nearly one-fourth of all the strikes for 25 years were due to attempts to enforce principles directly opposed to the finding of the Anthracite Commission and to the decisions of courts. Since the statistics are largely gathered from union sources, the inference is that union recognition was really the cause of more than the reported number of strikes assigned to that class. It is time the Government took a hand in this matter, especially in view of its action against the so-called capital trusts.

EDUCATING PUBLIC SENTIMENT.

Referring to the fact that public sentiment is so often arrayed against the employer, on the appeal of union agitators, the report expressed the opinion that it is largely due to the inactivity of employers that so little publicity is given to their side of the case. Onlookers—clergymen, teachers, philanthropists, public office holders and others—believe there never was a strike for anything but wages and hours. They discredit the statement that employees strike to enforce the union's arbitrary rules. Believing the information already presented to workmen through the association's *Review* has done much to bring about the present peaceful condition in the foundry trade, the speaker urged the extension of this method of education to other lines. The unions claim that 364 trade union journals are issued either weekly or monthly, apart from anarchist and socialist journals. While probably 8,000,000 journals and circulars of trades unions, socialists and anarchists are put in the hands of employees every month the *Review* of the National Founders' Association, with 6000 circulation is the only journal circulated among workmen to give the employer's side of the case. It was strongly urged that steps be taken to extend the publicity work of the association, both among workmen and the public generally.

RELATIONS WITH WORKMEN.

We cannot give too much attention to the welfare of our employees. We have now arrived at the point where a majority of our shops and an extremely large majority of our workmen are working under independent conditions. These conditions are not only acceptable but extremely gratifying to the workingmen themselves. It is our duty now to maintain these mutually agreeable relations by exercising every reasonable expedient in their behalf. I believe they are more pleased than we are, to be emancipated from the slavery of radical unionism.

Boil this whole question down and it comes to simply this: Are the employers of this continent going to sit supinely by and see these unlawful acts against themselves and their workmen repeated over and over again, first in one State and then in another, and by lack of energy allow this government and the non-employees of the country, who hold the balance of power, to be arrayed against us, supporting such flagrant labor trust methods simply because these people know little or nothing of our side of the case?

FINANCES.

The treasurer's report will show that the finances of the association are in exceedingly good shape. One year ago you directed the Council to call for special assessments of \$10, if the necessities of the season required it. We have called for but one-half of this amount. All bills of the association have been paid promptly. It has no debts and has more money in its treasury than ever before. In this connection it is gratifying to compare the expenditures of this

organization with those of the opposing force, the union, and to note that during the stormy period recently closed, the foundrymen have been called upon to expend only \$1 where the union has expended \$3.50.

MEMBERSHIP AND ORGANIZATION.

The past four years, it was stated, have severely tested the loyalty of the membership, and the number who fell by the wayside is very small. At Milwaukee an important machinery center, the foundrymen came out of the struggle of 1906 with one more shop than they started with. The union made every effort to break the ranks of the employers there. Had not the machinery manufacturers defended themselves their difficulties would have been many times multiplied at the hands of other unions, who were watching the outcome of the molders' strike.

A careful examination of the amount of money expended by the union in these strikes, as compared with the complete success obtained by the foundrymen, is ample proof of the wisdom of meeting organized labor with organized capital. I believe the foundrymen of this country recognize this necessity more keenly at this time than ever before.

During the past season we have had numerous applications for membership, many of which it has been thought by your council to be unwise to accept, for the reason that it considered they were not such as would successfully stand for the principles we are working under. The secretary's report will show you a considerable number of other foundrymen whose applications have been accepted. The opinion prevails in your Administrative Council at this time that quality of membership is to be sought rather than quantity. There are still many foundries whose membership is desirable, and who we believe should contribute to the work this association is doing.

The question of the proper form of organization in various localities has been discussed by this association at frequent intervals. In the past year the Chicago office, which for years was considered only temporary, has been made a permanent branch office; likewise the New York office. The council has also directed that another branch office be established, at either Minneapolis or St. Paul. I believe these branches will be sufficient to care for the needs of the association for the present.

CO-OPERATION WITH OTHER ASSOCIATIONS.

During the year an effort was made by President Van Cleve of the National Association of Manufacturers to form a council of the various national organizations composed of duly authorized delegates from each association. The purpose of this council is to consider the labor problem, exchange ideas as to methods and means to be adopted, in the hope that by concentrating our efforts on special lines, the maximum of results could be produced with a minimum of expense. This council has held three meetings. It is, however, too early to dwell upon the result of the undertaking.

The committee that has been standing for two years for the purpose of co-operating with a like committee of the National Metal Trades' Association has recently met the latter committee and a joint resolution was adopted providing for an exchange of views frequently between duly appointed delegates of each association. This report the council of the National Metal Trades' Association and that of the National Founders' Association have adopted. These committees will have frequent meetings, the purpose of which is to unite in attempting to establish such principles as are of mutual benefit.

Report of the Assistant Commissioner.

A. E. McClintonck, the assistant commissioner, presented a discussion of the campaign that had been so successfully prosecuted by members of the association in training molding machine operators. This, he said, had resulted in a very material increase in output, and had gone far toward making foundrymen independent of union restrictions. We quote from the report as follows:

The Iron Molders' Union used four methods in getting control of the foundry industry, namely: Limiting apprentices, opposing molding machines and improved appliances, limiting output, the minimum wage. And with these went the closed shop.

For 40 years through a most effective organization of national officers and walking delegates the work of corralling the molders and applying the limitations went on with the result that they succeeded in practically cornering the molders' labor market and assumed to dictate terms to their employers. You are all familiar with the results of these efforts; a scarcity of molders, your inability to train more or introduce labor saving appliances under penalty of a strike and bringing down upon you the wrath of the union. . . .

MACHINES AS STRIKE BREAKERS.

Involved in the molders' strike of 1906-7 were foundries making every class of castings produced in this country, from light gray iron bench work to the heaviest machinery castings, made in green sand, dry sand or loam. An excellent opportunity was therefore given to try new methods. May 2, 1906, found the molders on strike in larger numbers than ever before, the shops empty and no immediate prospect of getting skilled workmen to take their places. It was then decided to try the expedient of training specialists; in other words, applying machine shop practice to the foundry. At first only the poorest class of common laborers could be induced to accept work and then it was with difficulty these men could be persuaded to continue on account of numerous and continued assaults by the strikers.

The work in the various shops was classified and all the operatives placed in gangs under the instruction of the foreman or an assistant. Additional assistants or instructors were procured as rapidly as possible and the number of men in the various gangs increased as their progress would warrant. By this method one operative was taught to make a certain casting, a cylinder, for instance; another an engine bed; another a flywheel; and so far as possible were kept on that or similar work. The same was done in dry sand and loam as in green sand work. Men and boys who formerly worked as chippers, laborers and helpers were started first on the simpler jobs, gradually working to the more difficult. The results were marvelous. These men being used to hard work constantly increased the output, and it was soon apparent that with a much reduced number of operatives a larger output was obtained than with the union molders.

During this time the pattern shop was receiving some careful attention. The old method of making a pattern without regard to how the job was to be molded was passing away. Instead, the pattern was being simplified as much as possible in order that the least amount of skill might be required in the molding.

MACHINE OUTPUT AND UNION MOLDERS' OUTPUT.

Meanwhile the management was learning that the possibilities of the molding machine were almost unlimited. Ordinary wooden patterns were fitted to rockover molding machines, at no great expense, green men were put on to operate, and castings more true to pattern and in greatly increased quantities were produced. Every type of molding machine that could show results was purchased. As an illustration I refer to one particularly difficult job made in a large well equipped shop. For years three pieces were a day's work, for which the firm paid the union molder \$3.25 for day work. The job was fitted on a machine, something the firm never thought possible until pushed to it by the strike. A husky laborer was employed to operate the machine at a piece price of 20 cents each for good castings. His average for months past has been 22 good castings a day. An endless number of illustrations of this kind could be given. In some instances six or eight different jobs were molded on the same machine in a single day.

Recently the president of a very large firm, who is a practical man, in discussing conditions in his shop, said: "We have changed our system of operating entirely; the management furnish the brains necessary to run this shop, we hire good strong men and boys to do as we tell them and we pay them well. The crowd in the gangway to-day will be the molders of to-morrow. When we desire more molders we just shift the men and continue to make specialists."

During the past two years, as the result of strikes, fully 6500 journeymen molders have been added to the available skilled labor supply. These strikers have drifted to various parts of the country seeking employment, while the vacancies they caused have been filled by molding machines and new men. To the proprietors of struck shops who have carried this fight through to a successful conclusion, who by their energy, their patience, and their money have trained these new workmen, the foundrymen of the United States and Canada owe a debt of gratitude. By their efforts every foundry proprietor in this country has been greatly benefited.

The National Founders' Association can put up an organized defense, can repulse the enemy and force them to retreat, but are the members of this association operating union shops taking advantage of the opportunity and moving on to an advanced position? Have you even increased the number of apprentices to the new ratio of one to five? Are you installing molding machines?

A LESSON FROM THE DAYTON STRIKE.

By way of illustration I will refer to Dayton, Ohio. Last May a strike occurred in seven shops in that town, involving 300 molders and coremakers. The association was called upon for assistance and I went there to confer with our members and the District Committee who were called in to act for the association. At a meeting of the Dayton foundrymen I pictured to them as best I could the methods used by foundrymen at Milwaukee, Chicago and other cities in combating their strike. I referred to many specific in-

stances where two-year apprentice boys were in charge of important jobs weighing from 25 to 100 tons, they furnishing the brains and skill while three or four green handymen were doing the labor or actual ramming of the sand, setting cores, &c. Cases were cited where coremakers' helpers had in five or six months been broken in to do the best loan work in the shop and how these men had been able to increase greatly their earning power and at the same time materially lessen the cost to the firm.

The proprietors said they were interested, and suggested a meeting for the following day, at which time they would have their foundry superintendents, foremen and boss patternmakers present. We held the meeting, discussed the subject of handymen molders, specialists and operation of molding machines for the entire forenoon, but I could see the practical shop men doubted my statements. One or two of them said they had spent 50 years or more in the foundry, and while such statements sounded well in theory, in practice it wouldn't work out.

I then proposed that if the different firms would pay the expenses of their foremen or superintendents, I would go with them to Chicago, Milwaukee and other points, arrange for freedom of the shops, where they could take all the time necessary to inspect the work, talk with the foremen and instructors in charge, as well as the workmen themselves. A party of seven was made up and we spent five days inspecting shops making light and heavy work, both iron and steel. It was difficult for some of these veterans of the foundry to believe what they actually saw. In some instances they were converted against their will, but they went home and told their employers that I hadn't made my statements half strong enough. They were compelled to withdraw their objections and admit that specialization was possible in the average foundry, and that men could be taught to do the work in a comparatively short time if properly instructed by men having the necessary patience and who will put their hearts into the work.

The foundries of Dayton are now operating by what they term "advanced methods," and the foundrymen of that city will tell you that the strike has proved a blessing in disguise. Two of the proprietors recently told me they will never again employ regulation journeymen molders, but will break in or train their own men. They also stated that had they not attended our convention last year, and heard the reports of the foundrymen who had solved this problem, they would not have had the courage to undertake the task. They say the strike forced them out of a rut and compelled them to operate by methods they hitherto thought were impossible. As the result of our work two large firms in Dayton, who have nonunion shops, have made application for membership and thereby signified their willingness to contribute their share to carrying out this policy.

PERMANENT RELIEF POSSIBLE.

The mystery about the art of molding is exploded, and the great power and strength of the molders' union has been found tremendously overestimated. Every time an attack is made the union is routed with greater ease, but this is only a limited relief confined to struck shops. In order to produce the greatest benefits, advanced methods must prevail in foundries generally. If each shop will train molders sufficient for its requirements, the practice of stealing them from a neighbor foundrymen or one in an adjacent city will cease. The day is coming when the foundry will be on a par with the machine shop, and every known labor saving device used. When that time comes we will have fewer molders' strikes, the foundry will be industrially free and the American boy will have an opportunity to learn the trade of his choice unmolested.

Now that a slackening up of business is in sight, it is of the utmost importance that preference of employment be given the independent molders. Show them you appreciate the stand they have taken, and let them understand it is to their advantage to remain out of the union and with you. While it will be necessary for some time to come for this association to maintain a defense force, if the shops now union will take this matter up earnestly, lessen the degree of skill required in molding and install molding machines, then if a strike does come it will be much less of an interruption to business, more easily overcome and a saving in time and expense. If you desire industrial freedom in the foundry, make molders, make specialists and install molding machines—create a surplus of foundry labor.

Secretary's Report.

The secretary, F. W. Hutchings, discussed strike and membership statistics, presenting also some details of union membership and strike expenditures. In the association year ending October 31, 1906, strikes had been started in the shops of many members. Of these strikes 49 still required some attention in the early part of 1907. In the association year ending October 31, 1907, 23 strikes were started in the shops of members. Of this number only one had been begun in the last six months of the association year, indicating a very marked change in the

attitude of the union. In the calendar year 1907 the Iron Molders' Union reported 104 strikes which the national organization was supporting. It was estimated that in 100 additional cases grievances had been brought before the officers of the union and the sanctioning of strikes asked, but in all these cases the union officers had refused to permit the molders to go out, in view of the large drain upon their resources by strikes already existing.

WEDNESDAY AFTERNOON.

At the opening of the afternoon session George F. Monahan, the attorney of the association, discussed some measures which employers expect to support at the forthcoming session of Congress. One of these, which is known as the apprenticeship bill, makes it unlawful for any organization or association to prevent or to enforce measures tending to prevent the free employment of apprentices in any trade concerned with interstate commerce. While this bill, it is explained, would not apply to a large number of foundries, there are enough instances in which it would apply to give the National Founders' Association an interest in its enactment into law. Another reason for favoring such legislation is that it would be in line with an offensive policy in legislative matters. Heretofore employers' associations have confined themselves to defensive action, the pressure for labor legislation coming from the unions. Mr. Monahan also explained the features of a new anti-picketing bill which will be supported by employers. Decisions of the courts on picketing have varied, some giving quite wide latitude to the unions, while others have held picketing of any character to be unlawful and therefore a matter to be dealt with by injunction. The courts holding this last view have been of the opinion that peaceful picketing is a contradiction of terms. The bill which will be offered in Congress in line with this interpretation of the law will serve somewhat to countervail the anti-injunction campaign of the labor unions. It will not go farther than many court decisions have gone. It will make unlawful the picketing of a plant from which employees have gone out, and will punish the use of persuasion, intimidation, threats or violence calculated to deter those in the employ of industrial works from continuing in such employ. In general, the purpose of the bill is to make those acts criminal which are now subjects of relief by injunction. Like the proposed apprenticeship bill, it will only apply to plants or firms concerned directly with interstate commerce.

The Making of Molders.

J. L. Ketcham of Indianapolis, chairman of the Committee on the Winona Technical Institute in that city, reported on the progress made in the past year in the establishment of a foundry school under the auspices of the Institute, with the help of the National Founders' Association. At the time of the last convention four pupils had entered the foundry school. Now there are 32, all that the foundry building will accommodate. At first there was great difficulty in getting boys to take the foundry course. Now if there were money to enlarge the foundry department and provide additional equipment the number of pupils could be considerably increased. The trouble in interesting boys at the start arose from the fact that the Winona School had to compete with foundries which paid their apprentices. The plan therupon adopted was to pay the pupils in the foundry school and put the foundry on a commercial basis. Mr. Ketcham answered a number of criticisms that had been made of the basis on which the Winona School is operated. His answer was that this competition is so slight as not to be a factor; but whatever its extent, it was felt that some sacrifice should be made by the local foundries in order that boys might be taught the molder's trade. The speaker read from the report of the superintendent of the Winona foundry, giving in detail a typical week's work on the molding floor and in the laboratory and the drafting room. A list of firms who buy castings from the school was also read.

The report of the committee was received with the cordial thanks of the association and the work of the year approved.

John Knickerbocker of the Eddy Valve Company,

Waterford, N. Y., reported for the Apprentice Committee of the association, on which he had been associated with Messrs. Wanning and Whittemore. The committee had profited greatly by the advice and co-operation of M. W. Alexander of the Lynn works of the General Electric Company. The committee recommended the establishment of an apprentice department of the National Founders' Association, its work to be to induce the members to employ the largest number of apprentices the conditions in their respective shops would warrant.

F. D. Wanning of the Birmingham Foundry Company, Derby, Conn., also a member of the committee, said that letters had been sent out to the members asking their views on the most practical method of taking hold of the apprenticeship question. Many had favored the establishment of an apprentice department of the association. He urged that efforts be made by the manufacturers themselves to increase the supply of skilled workmen by giving proper attention to the training of young men. The point was made that in some cases manufacturers were not even availing themselves of the number of apprentices permitted by the union.

M. W. Alexander of the General Electric Company, who has general oversight of the apprentices school at the Lynn works, gave a most interesting account of that work. At present there are 300 boys and the company employs the "whole time" method in the training of boys. An article by Mr. Alexander giving details of the work at Lynn appeared in *The Iron Age* of September 19, 1907, page 780. Many of the facts brought out in his address were contained in that article. The General Electric Company employs three instructors for 125 young men in its preliminary or training room. This number of teachers, of course, would be too small if it were not that the instruction work is performed to a considerable extent by boys who have had some experience. That is, a boy who has been some time on a machine instructs a new boy, an arrangement that has been found to work very well. At present at the Lynn works the training room for machinists has 10,000 sq. ft. of floor space, and that for patternmakers has 1000 sq. ft. It is the intention to start soon a foundry training room, which will accommodate 20 to 25 boys. At Lynn the boys receive \$5 a week the first year, \$6.25 the second year, \$7.50 the third year, \$9 the fourth year, and \$100 bonus at the end of the four-year period.

The result of the discussion was the passage of a resolution referring to the incoming Administrative Council, with power, the establishment of an apprentice department of the association.

The Annual Dinner.

The National Founders' Association dinners have been noteworthy features of its convention. That of Wednesday evening, which introduced some innovations, including a vaudeville entertainment, was no exception to the rule. A Canadian guest occupied one of the seats of honor at the speakers' table, and President Briggs therefore introduced a popular Canadian member of the association, Edgar McDougall of Montreal, as toastmaster. Mr. McDougall presented as the first speaker Hon. Geo. W. Ross of Toronto, ex-Premier of Ontario. Senator Ross made one of the best addresses in the history of these convention functions, showing himself not only a master of Canadian fiscal and economic policy, but an orator able to invest with the spell of eloquence the ordinarily prosaic questions relating to international tariff relations. With great perspicacity he explained the compelling motives of the present tariff policy of Canada and made some luminous side references to trade relations between the United States and Canada, as reflected in Canadian purchases from the United States of \$221,000,000 worth, or \$37 a head, last year, while this country bought but \$86,000,000 worth from Canada. Senator Ross carried his auditors with him, and was warmly applauded.

Ex-Senator John C. Spooner, the other speaker of the evening, made some references to the American Federation of Labor's campaigns at Washington, and in the concluding portion of his address animadverted on the centralization phases of the more recent developments in the movement for Government control of corporations and of interstate commerce.

Walter S. Russel of Detroit contributed a humorous finale to the evening's programme.

THURSDAY MORNING.

W. H. Winslow, chairman of the Finance Committee, presented its report reviewing the financial operations of the past year and comparing them with those of the two preceding years. An item which appeared regularly in the financial statements of the earlier years of the association, namely, expenses of conferences with union officers, was conspicuous for its absence in the past two years.

Educational Work.

O. P. Letchworth, chairman of a special committee to consider what plans should be adopted for the dissemination of literature among foundry employees and the general public, presented a written report. It reviewed the efforts of the association in this direction and recommended an enlargement of the scope of the work now being done. The publication of a popular magazine, which should not only deal with labor questions but contain matter of such general interest as would give it access to the homes of workmen, was suggested by the report. A discussion followed, participated in by W. H. Winslow, J. H. Schwacke, H. N. Covell, I. W. Frank, W. S. Hallowell, F. B. Farnsworth, Charles A. Rathbone and R. E. Payson. Strong sentiment existed in favor of an increased expenditure for educational work, the point being brought out that while the unions have been very active in literary propaganda the employers' side of questions at issue with the unions does not get a fair or adequate presentation in print. The proposed change in methods of securing publicity was referred to the incoming Administrative Council for action.

Workmen's Insurance.

M. W. Alexander was asked to address the convention on the industrial insurance methods followed at the Lynn Works of the General Electric Company. He explained the features of the mutual benefit association organized four years ago at these works. The members of the association are divided into sections of 150 each and each section has its own officers and treasury. The dues are 10 cents a week, the sick benefits \$5 a week, and \$100 is paid to the heirs of a deceased member. Rivalry is created among the sections and thus a lively interest in the work is maintained. At present between 3000 and 4000 men have membership in the mutual benefit association at Lynn. The company has no part in the work of the association except that it appoints a general chairman who sees that the by-laws are lived up to. Last year the association paid \$15,000 in sick benefits. The death rate was 9½ in 1000 members, and 115 out of 1000 received sick benefits for a period of more than one week. The maximum period of assistance by sick benefits is 14 weeks.

Mr. Alexander described at some length a proposed scheme of insurance for employees which is being worked out at Lynn. By agreeing to deliver to some well established old line insurance company a large amount of insurance, say \$500,000 or \$1,000,000, the company got for its men the benefit of a 10 per cent. reduction in rates, seeing that the insurance company was at no expense for advertising, administration or agents' commissions. The employing company does not pay as a gratuity any part of the premiums on the insurance taken out by the men, but a plan has been devised by which the men will receive from the company a portion of their premiums in recognition of long continued service. For example, the company proposes to pay 10 per cent. of their premium to employees who have been with it two years, 15 per cent. to those who have been with it five years, 20 per cent. to 10-year men, and 25 per cent. to those who have been with it 15 years. Mr. Alexander had made a computation of the expense to the company on this basis, for maintaining its proportion of the premiums of 1000 men. Supposing all the 1000 men remained in its employ two years the company would pay \$2.18 per man for premiums for the second year. This amount would be increased in subsequent years until at the end of 15 years, presuming that all the 1000 men remained in its employ

that number of years, its share of the premium would be \$6.85 per man per year. The tendency of the arrangement would be to encourage permanence of service with the company, and in so far as this was secured the amount paid out by the company under the plan proposed was certainly not excessive. Mr. Alexander's address was ordered published in the association's *Review*.

Molding Machines.

Oliver Crosby of the American Hoist & Derrick Company, St. Paul, Minn., gave some account of the progress made in a further introduction of molding machines. The stripping plate machine, the speaker said, has proved to be the most generally serviceable type. He gave some account of the use of machines in his foundry at St. Paul after the molders went out in 1906. He found the molding machine problem more simple than he had thought. In the use of the stripping plate machine the pattern can be quickly adapted to the machine, and when this is accomplished the work is really done. The pattern shop becomes really the toolroom of a foundry which employs machines. Every well equipped foundry should have one or more men who are expert at putting patterns on machines. The speaker's company introduced a number of molding machines at the time of the strike last year, and took in green men who were taught machine molding. The output at the time of the strike was 250 tons a month. To-day it is 360 tons a month. The company uses machines for molding cylinders, drums and miscellaneous castings entering into its product, which is a general line of hoisting machinery.

THURSDAY AFTERNOON.

The discussion of machine molding was continued at the opening of the afternoon session. It was noticeable, however, that the subject did not evoke so much inquiry as in the convention of the previous year. At that time the members were in the midst of the educational period in the use of machines. Now much that seemed in doubt then has been thoroughly established and become part of the routine of the foundry.

Resolutions.

The Committee on Resolutions, through its chairman, F. B. Farnsworth, New Haven, Conn., presented a resolution indorsing the action of the Western Union and Postal Telegraph companies in the recent strike in opposing the demands of their employees for the closed shop; also a resolution indorsing the action of Congressman Denby in connection with the attempted appeal of the union telegraphers for Presidential interference. Both the resolutions were adopted.

John Kirby, Jr., of Dayton, was given the floor in connection with a resolution relating to the attempt to make headway for the unions in connection with the work of the Lincoln Farm Association, which has been organized to purchase the farm on which Abraham Lincoln was born and convert it into a memorial national park. After Mr. Kirby's statement Mr. Farnsworth presented a resolution reciting that the president of the American Federation of Labor had been elected a trustee of the Lincoln Farm Association, and that the insignia of the American Federation of Labor appeared upon the stationery and literature of the association, "indicating that all labor in connection with the proposed sacred memorial has been delegated to the care of organized labor to the exclusion of about 93 per cent. of laborers who are not members thereof." The resolution then goes on to protest "against the use of the emblem of any society, especially that of an organization which stands for principles which are diametrically opposed to those in support of which Lincoln gave us or our fathers the best of his life and manhood, and which are irreconcilable with his life and character," and to request that the Lincoln Farm Association "abandon the use of the emblem of the closed shop, and give public assurance that no person will be denied the right to participate in the construction of the memorial because of nonmembership in any labor union." A committee of three was appointed to present the resolutions to the chairman of the Executive Committee of the Lincoln Farm Association.

Election of Officers.

Antonio C. Pessano, Detroit, Mich., chairman of the Committee on Nomination of Officers, presented its report.

For president the committee nominated O. P. Briggs, who has been president and commissioner in the past year. Mr. Briggs took the floor to say that, as he had previously explained to the committee, it would be impossible for him to act as commissioner for another year. He was willing, however, to serve as president on condition that his entire time should not be expected. He would be glad to confer with those actively in charge of the association's interests and devote to its affairs such time as he was able to give. That there might be a full understanding, he announced in advance that if elected president he would make the following appointments, subject to the ratification of the Administrative Council: As commissioner, A. E. McClintock, and as assistant commissioner, F. W. Hutchings. Mr. Briggs paid high tribute to the ability and devotion of both. He commended in the same connection J. M. Taylor, who has been the Eastern representative of the association, with headquarters in New York. Mr. Briggs was elected president by enthusiastic acclamation.

For vice-president the committee presented the name of Henry A. Carpenter and referred to his able seconding of President Briggs in the work of the past year. Mr. Carpenter was re-elected by acclamation, as was also Secretary F. W. Hutchings. The People's State Bank of Detroit was re-elected treasurer. District committees were chosen as follows:

First District.—A. W. Whitcomb, Whitcomb-Blaisdell Machine Tool Company, Worcester, Mass., chairman; A. N. Abbe, P. & F. Corbin, New Britain, Conn., vice-chairman; F. D. Wanning, Birmingham Iron Foundry, Derby, Conn.; J. D. Hunter, James Hunter Machine Company, North Adams, Mass.; J. F. Lanigan, Davis Foundry Company, Lawrence, Mass.

Second District.—T. L. Richmond, Buffalo Scale Company, Buffalo, N. Y., chairman; F. E. Wheeler, International Heater Company, Utica, N. Y., vice-chairman; G. H. Johnson, Isaac G. Johnson & Co., Spuyten Duyvil, N. Y.; D. E. Titworth, Potter Printing Press Company, Plainfield, N. J.; H. D. Miles, Buffalo Foundry Company, Buffalo, N. Y.

Third District.—Thomas E. Durban, Erie City Iron Works, Erie, Pa.; J. H. Schwacke, William Sellers & Co., Inc., Philadelphia; Stuart R. Carr, Stuart R. Carr & Co., Baltimore, Md.; W. R. McClave, McClave-Brooks Company, Scranton, Pa.; Thomas Shipley, York Mfg. Company, York, Pa.

Fourth District.—Irving H. Reynolds, William Tod Company, Youngstown, Ohio; Omar N. Steele, American Shipbuilding Company, Cleveland, Ohio; Walter Russel, Russel Wheel & Foundry Company, Detroit, Mich.; R. H. Jeffrey, Jeffrey Mfg. Company, Columbus, Ohio; William Gilbert, Buckeye Foundry Company, Cincinnati, Ohio.

Fifth District.—W. H. Winslow, Winslow Brothers Company, Chicago, Ill.; J. W. Gardner, Gardner Governor Company, Quincy, Ill.; C. R. Stephens, Moline Plow Company, Moline, Ill.; T. R. Kackley, Atlas Engine Works, Indianapolis, Ind.; William Medart, Medart Patent Pulley Company, St. Louis, Mo.

Sixth District.—George C. Forgeot, Allis-Chalmers Company, Milwaukee, Wis.; A. J. Brawley, South Park Foundry & Machine Company, St. Paul, Minn.; George H. Smith, George H. Smith Steel Casting Company, Milwaukee, Wis.; Theodore O. Vilter, Vilter Mfg. Company, Milwaukee, Wis.; Oliver Crosby, American Hoist & Derrick Company, St. Paul, Minn.

Seventh District.—H. Cockshutt, Cockshutt Plow Company, Brantford, Ont.; Edgar McDougall, John McDougall Caledonian Iron Works Company, Ltd., Montreal, Que.; R. J. Whyte, Frost & Wood Company, Ltd., Smith's Falls, Ont.; Frederic H. Nicholls, Canada Foundry Company, Ltd., Toronto, Ont.; John M. Taylor, Taylor-Forbes Company, Ltd., Guelph, Ont.

Eighth District.—E. A. Watson, Caldwell-Watson Foundry & Machine Company, Birmingham, Ala.; Exile Burkitt, Southern Engine & Boiler Works, Jackson, Tenn.; D. T. Smith, Continental Gin Company, Birmingham, Ala.; D. A. Tompkins, D. A. Tompkins Company, Charlotte, N. C.; G. T. Thayer, South Side Foundry & Machine Works, Charleston, W. Va.

Apart from the first and second districts, chairmen

and vice-chairmen of the various district committees have not been selected.

William H. Pfahler, Philadelphia, was unanimously re-elected an honorary member of the Administrative Council.

A resolution was presented expressing in generous terms appreciation of the activity of Vice-President Carpenter in the past year and thanking him for his devotion to the association's interest.

The convention thereupon adjourned, and the new Administrative Council was convened for its first meeting. President Briggs nominated A. E. McClintock for commissioner and F. W. Hutchings for assistant commissioner, and both were unanimously confirmed.

A New Lucas Power Pump.

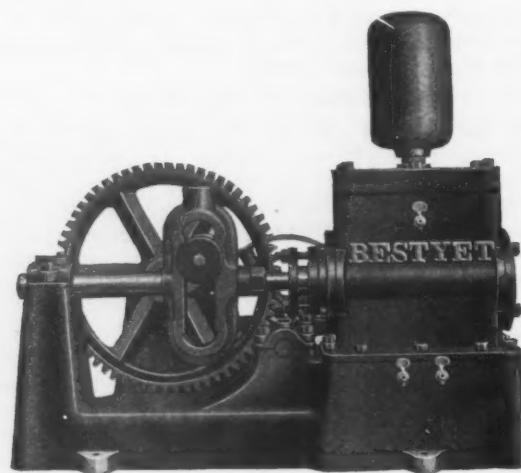
Under the trade name Bestyet, the Lucas Pump Company, Dayton, Ohio, is offering a power pump of strong and durable design for handling either hot or cold liquids and against any pressure for which the pump may be built. The pump is fitted with rubber valves of standard size, which rest on brass seats and have brass stems and springs. The valve seats have large openings. The water piston is made much the same as in the ordinary steam

steam pump of the same capacity. The cylinder of the size illustrated is $4\frac{1}{2}$ x 6 in., the capacity 2000 gal. per hour at 250 rev. per min., the ratio of the gearing 5 to 1, the driving pulley 14 in. in diameter by 4 in. face, and the suction and discharge pipe openings 2 and $1\frac{1}{2}$ in., respectively. The machine occupies a floor space of 19 x 36 in. and weighs 450 lb. Similar pumps are made in 1000 and 4000 gal. capacity sizes.

The Hoefer No. 8 Pipe Die Stock.

In a new die stock now being manufactured by the Hoefer Mfg. Company, Freeport, Ill., economy of labor in the changing of dies is effected by employing only one set of dies, adjustable from 1 to 2 in. The dies can be set to any size in an instant by shifting a plate on the stock. This plate is then firmly clamped by a thumb screw which cannot slip and the stock is ready for use. As the stock is malleable iron and there are no parts to get out of order, it is an extremely durable tool.

Narrow chasers are used instead of wide dies, and they are automatically withdrawn instead of being forced back as the pipe is being threaded, thus cutting a standard taper, which will make a tight joint. This narrow chaser eliminates considerable friction and makes the



Views of the Two Sides of the Bestyet Power Pump Built by the Lucas Pump Company, Dayton, Ohio.

pump and is packed with square rubber packing, which the company considers to be superior to leather, particularly for hot water pumping. The valves and cylinder packing being standard, can be obtained in any supply house.

The drive is through a single set of gears of wide face and large teeth, which gives ample strength and smooth running. The small gear is fastened to the pulley shaft by two set screws and has a long bearing on each side. The large gear has a long hub on the bearing side, and runs on a shaft to which it is held by a set screw. Should either shaft become worn it can be replaced by a piece of the same size obtainable anywhere. On the opposite side of the large gear is another long hub, to which is fastened a crank pin carrying a pressed steel roller held within the link by the crank plate. The power delivered to the pulley is transferred to the crank pin directly through the two gears.

The suction pipe is attached to the end of the base, and directly above it the discharge pipe is attached to the cylinder. The suction valves are contained in the base and are easily examined by removing the cap screws holding the cylinder to the base. The discharge valves can be reached by removing the cover and air chamber.

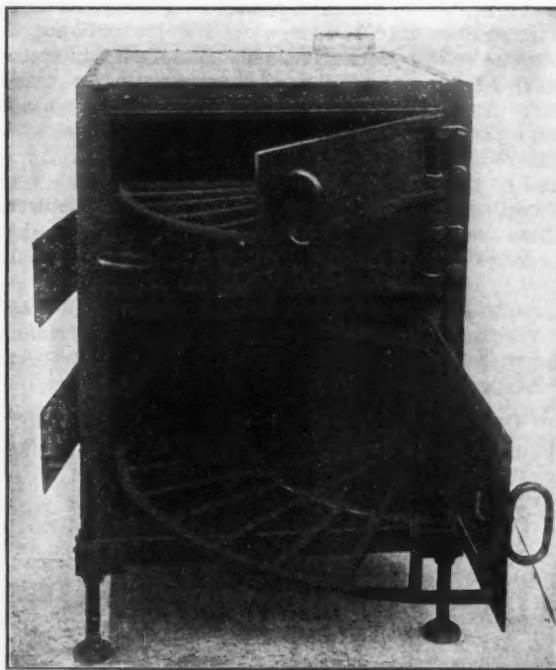
These pumps are built to work against 100 lb. pressure or about 230 ft. head. They can be used for boiler feeding and water pumping of all kinds or for air pressure tank service, and can be run by belt or can be connected direct. Motors or gas engines for power are furnished if desired. In power equivalent, this pump is claimed to consume about one-third as much steam as a

stock easy to operate. It is claimed that an average boy can thread a 2-in. pipe. As any size, either over or under standard within its range can be as easily cut as a standard size pipe and without special attachments, a perfect fit can always be made in a stretched fitting. Each tooth of the chaser, as it starts on the pipe, cuts deeper than the one preceding it, thus distributing the strain equally on each tooth, while the last tooth takes a fine finishing cut, leaving the thread as smooth as a lathe cut thread. By relieving the dies the tool can be taken off the pipe without fear of injuring the dies.

The McWane-Snyder-Cosgrove Company was incorporated in October under the laws of Pennsylvania, with a capital of \$50,000, to deal in pig iron, coal and coke. H. E. McWane, Lynchburg, Va., president of the Lynchburg Foundry Company, is president of the company. The vice-president is J. C. Cosgrove, mining engineer, secretary and general manager of the Hastings Coal & Coke Company, Cherry Tree, Pa., who is also connected with the Oak Ridge Coal & Coke Company, Hastings, Pa. The treasurer is C. H. Snyder, who has been engaged in the pig iron and coke trade in his own name for the past two years, being previously connected with Rogers, Brown & Co., for three years. The new company through its coal and coke connections will have a considerable tonnage of furnace coke and steam coal to put on the market. It will also supply pig iron to the Lynchburg Foundry Company, which melts about 50,000 tons a year. The offices of the McWane-Snyder-Cosgrove Company are in the Pennsylvania Building, Philadelphia.

The Obermayer Portable Core Oven.

Ovens for drying small cores are very important in a foundry. There are shops that have nothing but large ovens for drying small cores, which is well enough so long as there are cores sufficient to fill the oven, but to fire up a large core oven to dry a few cores is expensive and slow. It is needless to say that an oven built especially for drying small cores will do the work more satisfactorily and economically than some makeshift fireplace with a space to pile cores in. Such an oven is now being offered by the S. Obermayer Company, Cincinnati, Ohio, in the Cadet portable core oven herewith illustrated. It



The Cadet Portable Core Oven Made by the S. Obermayer Company, Cincinnati, Ohio.

is especially designed for use in the smaller foundries where it is not deemed advisable to go to the expense of putting in a large oven, and has several advantages, among others that it can be easily moved from place to place, and where a large oven is not needed it will answer the purpose perfectly. The Cadet is of the same design as the larger ovens built by the company, and is the same in every particular except size. It has three shelves; two $23\frac{1}{2}$ in. deep by $4\frac{1}{2}$ in. high; and one $23\frac{1}{2}$ in. deep and $9\frac{1}{2}$ in. high. The overall height is 44 in., and the height without the legs is $36\frac{1}{2}$ in. The width is $29\frac{1}{2}$ in. and the depth $32\frac{1}{2}$ in.

The Frick-Hostetter Coke Purchase.

The H. C. Frick Coke Company, Pittsburgh, Pa., which for years has owned a half interest in the Hostetter-Connellsville Coke Company, has bought the other half interest from George I. Whitney of Pittsburgh. The Hostetter-Connellsville Coke Company has 705 ovens in the Connellsville region and had a capital stock of \$1,500,000. None of its stock has been on the market for years. The par value is \$50 per share, but above that price was paid for the half interest just bought.

This purchase gives the Frick Coke Company a total of 19,700 ovens in the Connellsville region, of which about 6000 are now idle on account of falling off in demand for coke, due to the shutdown of so many blast furnaces by the United States Steel Corporation. It is not improbable that the coke output will be further reduced should more furnaces be blown out. The Frick Company also owns 2250 ovens in the Pocohontas region and is now opening four new coal mines in that district with the view of building more ovens next year should conditions warrant. None of the coke made by the company in the

Pocohontas region is shipped to the Pittsburgh District, but is sent West.

Reports that the Frick Company and other leading coke interests are contemplating a reduction in the wages of coke workers are untrue. As far as that company is concerned, no reduction in wages has been considered up to the present time. It has under erection some new ovens in the Connellsville region, but work on these will not be pushed until their output is needed.

The Lunkenheimer Improved Sand Blast Nozzle.

Although particularly adapted for cleaning castings, the improved sand blast nozzle made by the Lunkenheimer Company, Cincinnati, Ohio, can be applied to quite a number of other uses, such, for instance, as removing paint or stains from metal or wood, frosting glass, imparting a fine luster to brass and other metals, &c. Fig. 1 shows the exterior of the nozzle and Fig. 2 a section.

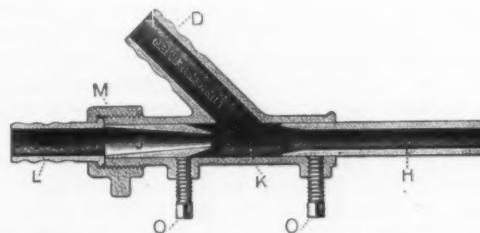
The design of the nozzle is the result of seeking to decrease the tremendous wear on the outlet tube H, Fig. 2. This objection has been largely overcome by making this tube of a special hard composition. Attention is also called to the internal shape of the air tube J. This particular shape not only lends more force to the blast, but quite a saving in air is effected. The body K, tailpiece L, and union M are made of very hard bronze. The wearing parts, *i. e.*, outlet tube H and air tube J, can be inexpensively renewed when worn out.

From 60 to 100 lb. air pressure should be used to obtain best results, and the tubes H and J should be adjusted in relation to each other to suit the pressure. These tubes are moved or changed easily by loosening the set screws O. The higher the pressure the closer the tubes should be placed together.

By the use of the nozzles for cleaning castings, it is claimed that from 30 to 50 per cent. more castings can be cleaned, and that the nozzles are decidedly more effective than the usual means employed. The smallest corner can easily be reached, and if applied to the outside of brass



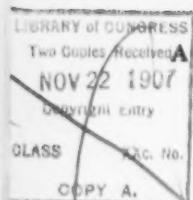
Exterior of the Lunkenheimer Sand Blast Nozzle.



Sectional View of the Nozzle, Showing the Removable Parts Subject to Wear.

castings, an effect is produced that resembles wire brushing.

In a typical application of the nozzle for cleaning small castings, the sand blast room is partitioned off from the foundry proper, and a hood is arranged slightly above the bench on which the cleaning is done. To this hood is connected a suitable suction pipe, which carries off the dust and dirt. The sand that is carried off through the suction pipe can be used over again. Suspended from the ceiling in any suitable manner is a reservoir for the fine sand used. This reservoir is connected by a flexible hose to the nozzle D, to which the sand feeds by gravity. Connected to the removable tailpiece L, of the nozzle, is a hose leading from the compressed air supply. A valve in this line allows the air to be turned off or on as desired.



Rust Prevention. I.*

A Treatise on the Preservation of Iron and Steel by Paint.

BY L. M. STERN, CLEVELAND, OHIO.

The efficiency of protective coatings for metal surfaces is entirely dependent upon the character of exposures, adhesiveness of the coatings, resistance to abrasion, and other qualifications, in consequence of which we are led to investigate the various conditions in order to meet them in the most economical and convenient manner possible.

Oils and greases of various kinds have been used for protecting metallic surfaces from the absorption of oxygen. Great varieties of them are used where the exposure is not permanent or severe, and the oils or greases are to be removed easily after they have served their purpose; for example, machinery, firearms, carpenters' and mechanics' tools, &c. Even these, if left out in the rain, will become rusted soon after atmospheric conditions or water obtain^s the oil, causing its washing off by friction or elimination by evaporation or decomposition. The question, however, of temporary prevention of rust by the use of oils and greases is of small importance compared with the protection of costly steel and iron structures and other large metal surfaces, and consequently these will engage our attention so that the selection of the proper materials for the production of protective coatings may be accomplished in the manner most desired.

Porosity a Weak Feature of Some Paints.

Various paints, oils and varnishes may be used, and their protective qualities will last as long as they will be devoid of water absorbing properties, and maintain a coherent adhesive coating on the surface.

Very often an oxide paint pigment is mixed with oil and used as a protective coating for metal. The oil neutralizes temporarily the oxidizing properties of the pigment in question, but when the dried paint becomes porous by the disintegration, excess oxidation, or evaporation of the oil, the oxide pigment takes up moisture, carries it to the metal surface and there conducts a process of conjoint attack in generating rust that would not be possible with a carbon pigment used under similar conditions.

The porosity of a paint, however, is very rarely taken notice of in time to prevent rust, as it often, while in this condition, appears to remain a coherent, adhesive mass of fair density and resistance to mechanical abrasion. The most noticeable feature which may be easily discerned in this respect, however, is that the coating has lost its glossy appearance, and appears dead or dried out, and even in this condition it is not always porous enough to admit moisture entirely through the coating.

Paints or varnishes intended chiefly for decorative purposes, that will last for 15 years on the inside wood-work of a residence, will do well if they last more than five years on the outside wood-work of the same residence, and would be an exception, indeed, if they would last over two years on the tin roof or gutters, thus demonstrating the great difference in exposure and consequent variation in the decomposition of the paint on different portions of a house. It remains for us, therefore, to compound paints for specific purposes, made of such material that will give them the greatest efficiency.

Cheap Paints for Metal Roofs.

In a majority of instances paint dealers throughout the country sell most of the paint intended for wood surfaces from \$1.25 to \$1.50 per gallon. Yet, when it comes to paint for metal roofs, the prevailing condition seems to be that the dealer can not sell a paint for this class of work for more than 50 or 75 cents per gallon. Why? Because the uninformed possessors of false economical paint principles believe "If the paint on the visible exterior of the house, which is expected to look

pleasing to the eye, cost a certain price, paint that is put up on the roof and which is not necessary to look pleasing to the eye, should not cost half that price." Therefore, the price that controls the quality of paint on the market for metal roofs which are sold by the dealer is, unfortunately, kept down by popular demand.

Another reason for a vast amount of cheap trash on the market for metal protection and called paint is the fact that the painter or tinner applies a cheap quality so that his own temporary profits may be thus gained. Painters and tinnings invariably are asked by their customers for prices "per square" for doing the job (details of quality and materials omitted), and in order to secure the work they are tempted to make a price consistent with their chances of a successful issue. As a rule the tinner does not care much whether the paint he puts on wears one or five years. It makes no material difference to him. It may present a good appearance for a few months after it is applied, and be almost entirely washed off in a year or so afterward.

There are many paints that will wear well for a period of from 5 to 10 years on sheet metal exposed to the weather, and also on bridges, but the manufacturers of these are compelled very often to give a very close bid in order to get a contract and are compelled to use cheap material; in fact, they have often made the statement to those who attempt to sell them high grade paint that "our customers will not pay us any more for our material with high grade paint than if it were coated with the cheapest that could be obtained."

Paint Ingredients, their Classifications and Functions.

Paint ingredients we shall divide into two general classes, namely: Liquids and solids. They consist of the following:

1. Pigments—(dry powdered, insoluble substances).
2. Vehicles—(liquid materials for carrying the pigments).
3. Volatile oils and dryers—(evaporating oils, &c.).
4. Soluble solids—(solid substances for dissolving into the liquids).

Pigments.

Pigments (for paints) are those dry powdered substances intended for mixing with liquids for the purpose of making liquid or paste paints.

All pigments when dry hold water freely.

The pigments used in metal preserving paints are all derivatives of minerals, on account of their cheapness in price, stability and durability, while those pigments which are made of vegetable and animal products are used for artistic and beautifying purposes.

Pigments are generally termed "dry colors," but this term is erroneous, for the reason that many pigments do not possess any color, being merely white or black. They are likewise termed "dry paints" which term is ambiguous, for the reason that dry paint is often the substance which results in a liquid paint becoming dry on a surface. Pigments we separate into two classes—Natural pigments and chemically produced pigments.

Those which are used in the manufacture of protective coatings are as follows:

Black pigments.	White pigments.	Yellow, red and brown
Graphite, C....	White lead, $2\text{PbCO}_3 \cdot \text{PbH}_2\text{O}_2$.	Yellow ochre, Fe_2HO_4
Lamp black, C...	Oxide of zinc, ZnO	Umber, $\text{Fe}_2\text{HO}_4 + \text{MnHO}_4$
	Zinc white, ZnO	Iron oxide, Fe_2O_3
	Lead sulphate, PbSO_4 .	Venetian red, $\text{Fe}_2\text{O}_3 +$ impurities.
	Whiting, CaCO_3	Red oxide, $\text{Fe}_2\text{O}_3 +$ impurities.
	Barytes, BaSO_4	Red lead, Pb_2O_4 .
	Barium sulphate, BaSO_4	Metallic red, $\text{Fe}_2\text{O}_3 +$ impurities.

While there are many more pigments used than these mentioned for metal preserving paints, the balance of them are generally used for their coloring properties, or as a means of deceiving purchasers by false statements, as to extraordinary merits, which they are presumed to possess.

The function of a pigment is to thicken the vehicle, to make it opaque with a suitable material or color, to give the paint a viscous body (viscosity) and add tough-

* Copyrighted by the author. Abstract reprinted by permission.

ness and durability to the paints when dry. Some pigments accomplish this with a great variety of results, especially when more or less of it is used than the amount necessary to perform its maximum amount of usefulness. The exact amount of pigment or pigments to be used in making a paint to possess the proper thickness when spread on a surface to obtain the greatest efficiency in its protection can only be ascertained by actual tests for their proper working qualities under the brush.

Actual tests for the durability of the pigment are necessary in determining the quantity of the pigment to be used for the reason that there is such a variety of grades of pigments on the market, and they possess an individuality of certain capacity for absorbing or "taking in" the oils used.

This is especially true for the reason that one manufacturer's pigment is at variance in texture, freedom from impurities and other qualifications from another's which bears the same name.

Each class of pigments has a different effect upon the drying or oxidizing properties of linseed oil: Some of these pigments retard the drying properties while others hasten the oxidation to a remarkable degree.

Among those of the latter may be mentioned all of the pigments containing oxygen in their composition, read lead (Pb_2O_4) especially. The pigments which contain oxygen prevent the formation of rust while they are in combination with oils, but when the oils either evaporate or become excessively oxidized so that the pigment protrudes through the film of oil on the dried painted surface, the pigment then co-acts with moisture and atmospheric oxygen and the metal surface beneath the paint becomes rapidly and vigorously attacked, whereupon the very pigment which was originally a protective medium becomes a rust producer.

The carbon pigments are elements and consequently can only consist of carbon excepting where there is an impurity or an adulteration present and this is not as a rule premeditated, but rather accidental; at all events impurities are not generally found to any such degree as they are in the lead or chemically produced pigments. The impurities in carbon pigments are invariably inert substances and do not promote chemical activity in producing rust.

The carbon pigments show a far superior resistance to the accumulation of rust, when the oils begin to wear out or become eliminated from a painted surface after prolonged exposure than do the oxygen pigments, moreover they are not affected to any extent by acids whether in the liquid or gaseous form. Hence, it will be seen that the carbon pigments are to be preferred, graphite especially.

We may easily destroy the efficiency of the best pigment by the use of admixtures. A coarse granular substance added to graphite tends to give to the painted surface a rougher coating of paint which serves as a lodging place for water.

Pigments as powdered dry substances are fixed or stable bases, but as coloring materials (excepting the carbons) they invariably fade after prolonged exposure, and while their stability as a base may be relied upon, the various effects which the different pigments possess in their co-active properties with drying oils are more or less important. It is not so important however, as the proper treatment of the oils to be used.

Neither heat nor cold affects pigments to any undesirable extent,—graphite, Venetian red, red oxide, yellow ochre, umber and many others being fire-proof to the extent of readily withstanding temperatures many times higher than that necessary to produce a red heat on steel. They are also acid proof to the extent of not being affected by the most effective acid fumes or gases that are possible in open atmospheres.

Many deceptions on this point are practiced upon the public by dishonest manufacturers, who claim or infer originality in that they have a fire and acid proof pigment, when in fact the majority of the most frequently used and cheapest materials for this purpose possess these features.

It will be seen that the question of selecting pigments that will withstand heat, cold, and acids is a simple one, and that the white and colored pigments contain oxygen which when combined with a drying oil hasten its oxidation.

The liquids used in paints are compound substances. They are not fixed or stable, and they constitute vehicles susceptible to decomposition, vitally affecting the durability of the film of a protective coating and therein lies room for constant investigation and improvement.

Vehicles.

Vehicles are those liquids which are used with pigments to carry them in a fluid form for convenient application on the surface for which they are intended.

The functions which vehicles should perform in protective coatings for metal are that they should have a close affinity with the pigments with which they are mixed and form a dry, waterproof and durable non-porous coating, one that will not chemically deteriorate the metallic surface on which it is applied. Certain oils have been found to possess the greater amount of these functions, and those oils which dry on a surface by coagulation due to oxidation are being used for the purpose.

The oils which dry or coagulate by oxidation are not numerous, but their extraction, purification and subsequent treatment are very important, demanding a large amount of technical skill; these oils are more or less viscous, varying considerably with the process and care taken in their preparation.

The value of an oil for use as a vehicle depends almost entirely upon its durability when dry; thus oils may be divided into two classes, the fatty oils and the volatile or evaporating oils.

The fatty oils are greasy and are incompatible with water; when oil and water come together they do not mix, (excepting when mixed with strong acids or alkalies.) Water running over a fatty substance does not wet its surface. This property is therefore useful for oil paints, for surfaces coated with an oil paint made of fatty oil and pigment are protected from the destructive action of water.

Drying Oils.

Those fatty oils which when exposed to the atmosphere, after being spread on a surface, become solid and coagulate into a varnish like coating, are known as drying oils.

Among the drying oils the best known and most commonly used are linseed oil, poppy oil and Chinese wood oil. Poppy oil and Chinese wood oil, however, are not only too expensive to use for the manufacture of protective paints, but they do not possess sufficient durability over linseed oil to warrant the excess cost necessary for their use. All other drying oils either dry so slowly or imperfectly that they are undesirable compared with linseed oil.

The drying power of oils is directly proportionate to the amount of oxygen they are capable of absorbing, and if the absorption of oxygen is not checked the oil becomes over oxidized and loses its tenacity and cohesiveness.

The increase of drying properties of linseed oil is accomplished by extracting impurities which chiefly consist of cellular tissue and albuminous matter, &c. It is usually done by storing the oil in large tanks, allowing the impurities to settle to the bottom after which the oil is drawn off, leaving the sediment behind. The oil is then clarified by passing through a filter press.

To increase further the drying properties of linseed oil it is boiled in the presence of manganese dioxide, manganese borate, red lead, litharge or other substances and raised to a temperature high enough and maintained long enough to impart the proper requirements to it.

When linseed oil dries it is called "linoxyn" (linseed oil + oxygen) for the reason that it forms a perfect chemical union with oxygen and is then converted into the solid material thus named. Linseed oil expands during the period of absorbing oxygen until it becomes thoroughly dry, after which the swelling up very gradually subsides. Almost any one familiar with this oil knows

that after the drippings from a linseed oil can fall on a piece of glass or other non-porous surface, the oil begins to thicken as it dries.

The formation of a paint or oil skin on the top of liquid linseed oil paint exposed to the atmosphere is thus easily accounted for as being a formation of linoxyn. It will be noticed, furthermore, that a linseed oil paint skin becomes crinkled on the top, and this is due to the absorption of more oxygen on the surface, where contact is had with atmospheric oxygen, than can be admitted farther below the surface thereby causing expansion on the top greater than the wet side of the skin which lies underneath. Gradually the paint skin admits more oxygen until the linoxyn gets thick enough to retard the progress of absorption, and reaches a point where it seems to cease.

It will be seen that pigments mixed with linseed oil cut down the percentage of linseed oil in proportion to its bulk, for the formation of linoxyn, and the subsequent clogging of the pores in the linoxyn by the pigment (which, if graphite, does it to a greater degree than the coarser pigments), render the linoxyn for a limited time less porous than if the oil were not combined with the pigment; provided, however, that not more pigment be used than the oil will properly envelop and carry with it.

It will be noticed, moreover, that a fresh dried linseed oil paint film (without a volatile oil admixture) is thicker than when the coating was in the wet state. This causes the oil to expand and protrude above the pigment, thus exposing the protruding oil to direct attack of disintegrating influences, while protecting the pigment at the same time. Shortly after the linseed oil becomes dry and reaches its fullest extent of expansion it begins to subside and to lose its gloss, on account of becoming porous, and also for the fact that it becomes excessively oxidized and worn down to the pigment. At this stage oxidation and disintegration of the vehicle are retarded or accelerated according to the nature of the pigment, which, if carbon, accomplishes the former, and if oxygen pigments the latter. Hence, it will be seen that the organic matter of a paint which is the vehicle, is the unstable and highly sensitive portion of it that requires the most important and careful treatment.

Volatile Oils.

The volatile oils used in paints are those generally called terpenes in chemistry. They usually belong to one of the groups of hydrocarbons having the same or a similar composition as turpentine ($C_{10}H_{16}$). They are highly inflammable and when dropped upon a sheet of glass and exposed to the atmosphere for a short time completely evaporate. The function of a volatile oil in paint is either to adulterate the linseed oil; lessen the viscosity of the paint; cause the paint to flow more freely so that a thin and consequently quick drying paint will ensue; or for the purpose of dissolving gum resins so as to make a quick drying varnish, sometimes used as (and erroneously called) a dryer. In this case the volatile oil evaporates from the resin leaving a thin coating or deposit of the resin of the same character practically as it was before being dissolved into the volatile oil.

The volatile oils usually employed are benzine, petroleum naphtha, coal tar naphtha (sometimes called creosote oil), benzole and turpentine. When these are used to any extent in linseed oil, paint not having a solid composition in solution with the oil, the paint loses considerable of its value. The pigment will separate from the oil freely and precipitate to the bottom soon after being mixed with the oil. The viscosity and adhesiveness of the paint would be impaired, the coating would be too thin to give ample protection and porosity would result immediately after the evaporation of the volatile oil from the painted surface, thus defeating the very object of a protective coating and rendering the coagulated mass of dried paint less efficient and durable.

Metal surfaces defy the absorption of paint to such a degree that the admixture of a thin or volatile oil for the purpose of creating a penetrating paint is useless. Hence, the lack of necessity of using a thin priming coat, which, if used, would run down in streaks on a vertical or inclined surface.

On the other hand, should the paint be made quite thick by the use of the pigment it will be done at the expense of the vehicle and its adhesiveness, as there will not be sufficient vehicle to carry the pigment over the surface to be painted, and leave a glossy oily finish.

Protective coatings for metal should be heavy bodied by the use of a heavy bodied vehicle and should be sticky enough in the liquid state to take to the metal freely from the brush. It should be capable of being brushed out thin or flowed on thick before it has time to set and should not run on a vertical surface when thus applied.

It should be quick setting but slow drying; the former to withstand unexpected rain storms shortly after application, and the latter to prevent premature hardening to a state of brittleness, not consistent with sufficient expansion and contraction of the metallic surface due to extreme changes of temperature, which on a dry paint film averaging one two hundredths of an inch in thickness, would not be inconsiderable.

Soluble Solids.

Soluble solids, as their name implies, are those solid materials which, when melted into a liquid state, are capable of being dissolved into the oils for the purpose of creating a compound vehicle or a varnish.

Varnish gums are soluble solids and so are tars, pitches, asphaltums and also prepared compositions made for the purpose; all of which have various and diverse qualifications for use in paints and varnishes for specific purposes, and a knowledge of their characteristics is necessary in order to select the proper ones for their adequate use.

The functions of soluble solids, in protective linseed oil paints, are to impart to the oil quick setting, adhesive elastic properties, viscosity and durability by way of protecting the linoxyn from over oxidation, and that state which is commonly called the "chalking off" condition of the pigment in the dry paint, in which state it reaches the point where it has ceased to be a protective coating. The prolongation of the protective qualities of an oil by the use of a soluble solid depends upon the character of exposure, together with the proper amount of, and character of, the soluble solid to be used in the oil, and also the quality of the oil to be used. The boiling down of linseed oil to a thick sticky consistency does not take the place of the proper sort of soluble solid, for the reason that it will not "take to" a sufficient quantity of pigment, neither will it allow of the production of free and easy spreading qualities. Furthermore, the oil thus treated does not delay excess oxidation, which is the feature most desired.

The progress of oxidation of linseed oil paints, not having a soluble solid, may easily be noticed after frequent rains, dews or other forms of moisture have become evaporated soon after contact with the dried paint (similar to the action necessary to rapidly produce rust).

The paint loses its gloss, becomes dried out eventually; so that the only perceptible part of the paint which is left is the pigment. All of these characteristics develop to a degree, proportionate to the frequency with which the applications of moisture on the surface and its complete evaporation therefrom have been accomplished.

A soluble solid to counteract these defects should be insoluble in water, but soluble in linseed oil. It should be solid yet elastic in its basic state and maintain this condition without perceptible change. Withstanding as large a variation of temperature as possible, it should not absorb oxygen nor become perceptibly affected by it, and when dissolved into the oil should form a compound vehicle which will effectively combat the attack of water, heat, cold, oxygen, sulphuretted hydrogen gas, carbon-dioxide gas, and to a great extent the effects of the oxide pigments when such pigments, of necessity, have to be used. It should not impair the proper drying qualifications of the oil; that is, not allow the coating to remain tacky or sticky for a long time after it is applied. When necessity requires it, it should allow of sufficient volatile oil in combination to allow the paint to spread freely and set tough enough in a few hours to withstand the deleterious effect of unexpected rainfalls, and possess an amount of cohesiveness that the viscous

mass of solid soluble material will flow together while the evaporation of the volatile oil takes place, leaving the surface tough, elastic, smooth and waterproof, thus eliminating the defects possessed by all of the straight oil paints where volatile oils are used.

The proper use of a soluble solid in linseed oil paints intended to prolong the life of a protective coating for metal has heretofore been but feebly attempted by paint manufacturers. Resin and some of the black pitches are often used, and these are used mostly as adulterants, or to add a temporary glossy appearance at the expense of the durability of the paint which contains it.

There has been little or no demand for the use of soluble solids in the composition of oil paints for the reason that the public has not known the benefits to be derived from the use of it. The extra cost necessary for its addition to paint, together with the difficulty of obtaining one possessing the requisite physical and chemical requirements, which can only be ascertained after exhaustive and tedious tests covering years of experimenting, has induced manufacturers of protective coatings to abandon this feature in the composition of their products, and as a result almost all of the protective coatings now on the market with any claims to being high grade are straight oil paints with the omission of a soluble solid in their composition.

Those paints which are not of recognized standard as being high grade often have resin, pitch or a cheap resin dryer in their composition.

The writer has been confronted with these facts for many years, and after an exhaustive system of experiments has succeeded in converting, by the use of chlorine gas, an oil of vegetable origin, which has no drying or oxidizing properties, into a solid rubber-like mass of a light yellow color, completely converting the vegetable grease or fatty matter into a new substance, which, when melted (necessitating a heat of 600 degrees F.) turns black, flows like oil and is perfectly soluble in boiling linseed oil, becoming part of the vehicle itself and incapable of mechanical separation therefrom.

This soluble solid composition has in the past five years proved to be the missing link needed to produce a protective coating of the highest efficiency in every respect, and it is with pleasure to the writer that a protective coating with over twice the durability of anything yet produced for a top coat, of the highest efficiency is now produced and offered to those who are interested enough in this subject to demand it for their use.

The writer has become acquainted with paints that were represented to contain rubber (caoutchouc) and has personally made paints with this material. Manufacturers of so called "rubber paints" claim that the rubber contained in their paints makes the paints more adhesive and elastic, thereby extending the life of the paint, by reason of its lessened liability to become hard and brittle and eventually crack.

The extremely high price of rubber, notwithstanding the small amount needed on account of its property of swelling up considerably in the oils into which it may become dissolved, makes its use in paint prohibitory; furthermore, as a paint material it is worthless.

All manufacturers of rubber goods know that oxidizing oils, or oils used in the manufacture of paint, will rot the rubber shortly after exposure to the weather, and when it has become dry on a surface its shrinkage opens up large crevices and the balance of it becomes crumbly, resembling a condition of dry rot. These circumstances clearly demonstrate that rubber has absolutely no value in paint and that the use of it in this respect not only entails a useless expenditure of money incidental to its cost, but also the cost of applying a paint containing materials which tend to curtail its efficiency.

Their Bases and Characteristics.

The line of demarcation as to what constitutes a varnish for a paint has been more or less confused where the varnish is not transparent and where the paint has a varnish vehicle. In order to avoid confusion we shall define a varnish as a liquid substance, not containing a pigment, which is capable of drying on a surface over which it has been diffused to beautify or protect it.

A varnish may consist of a drying oil, a drying oil with a soluble solid base, or a volatile oil with a soluble solid base, or the combination of any or all of these into one.

Varnishes may be either transparent or opaque, and, when the latter, they are generally black, such as tar varnish or asphaltum varnish, &c. The transparent varnish bases consist of common resin, which is the residue left in the stills after the distillation of turpentine, or resins, originating by their exudation from various species of trees, some of which have disappeared centuries ago, leaving the resins embedded in the soil, and include mastic dammar, Sandarac, copal, kauri, and many others, all of which contain carbon, hydrogen and oxygen, and are very brittle at ordinary atmospheric temperatures and melt at temperatures ranging from 200 to 500 degrees F.

When they are combined with linseed oil or linseed oil paints, they impart considerable viscosity and adhesiveness to the paint while in the liquid state, and when the paint becomes dry higher gloss and better finish, but the paint rapidly cracks badly and loses its adhesiveness after prolonged exposure to the atmosphere on a large metal surface subjected to considerable heat from the sun's rays, where rapid radiation of the heat and sudden cooling of the metal cause considerable contraction and expansion to take place.

The increased viscosity and adhesiveness of the liquid paint are not only lost in the dried paint, but it rapidly becomes very hard and brittle. This brittleness is due to the evaporation of the volatile matter in the paint or the excess oxidation of linseed oil in which a brittle soluble substance has very little lasting effect.

Combination with a resin or pitch tends to excessively harden pigments when they have become dry, and thus it will be seen that the separation of a pigment from a resin or pitch varnish is an advantage where great variations of temperatures are to be met with.

The pitches which are used in many of the so-called protective coatings are coal tar pitch, asphaltum pitch, petroleum pitch, &c., and these go under so many different names, in order to hide their identity from purchasers, that it would be impossible to keep track of the new names, which are invented to deceive the unwary.

These pitches have to be made into very hard brittle substances by cooking them in kettles before adding the oils; otherwise their foundation as a base would not be solid enough to allow the substance to harden on a surface and become dry.

When pigments are added to a soft pitch with a view to causing them to dry, this not only affects the toughness, but also the stickiness, because the pigment alone has no viscosity, being a dry substance. Therefore when pitches are to be used they should be used in varnishes only, if they are to impart their full value to a coating intended for protective purposes.

The melting point of a pitch or resin is the degree of temperature necessary to maintain it in a molten state, and the brittle point is the degree of temperature necessary to cause it to harden into a brittle state, which state can be noted by striking it with a hammer.

Almost all of the different pitches have a different melting point. One that softens while in combination with paint materials during exposure to atmospheric temperatures, and will correspondingly harden to a state of brittleness when the temperature lowers, is sure to crawl and crack on the surface. These cracks form in transverse directions, forming a defective surface, which is known as being "alligated," resembling in shape the peculiar formations on the surface of an alligator skin.

When an alligated surface forms, and continued contraction and expansion of the metal ensue, the edges of the alligated scales will finally curl up, "letting go" of the metal entirely, thus allowing moisture and dust to get underneath them, facilitating the process of ridding the surface of the paint and promoting active rust formations.

Most of us know, however, that atmospheric heat on a warm day will soften coal tar pitch to such an extent that it will run on a surface or may be pulled out into long strings and after cooling it by dipping it into a basin

of cold water it will fly into small pieces or may be finely pulverized by a simple blow from a hammer. This once soft and afterward brittle condition will be noticed where paints or varnishes containing these pitches are exposed on a surface at atmospheric temperatures, provided, however, that such paints or varnishes have been applied on the surface heavily enough to obtain from them their maximum amount of wear.

In proportion to its bulk, a large amount of volatile oil is required to reduce a resin, tar or pitch to a liquid condition thin enough to be capable of proper spreading properties, with a paint brush, at a temperature of 60 degrees F. Hence a very thin deposit of the solid base of the mixture will be left upon the surface after the volatile oil has evaporated. If extreme care is not taken in brushing it on thickly enough to allow for the evaporation of the volatile oil and leave a substantial coating, lack of durability will be inevitable, for the coating which will remain on the surface will be so thin or badly disintegrated by the solvent action of the oil first, and its evaporation afterward, that its adhesion to the surface will be a matter of only a few months, or even weeks. On the other hand, should it be spread on too thickly, a badly alligated surface will result. These are the reasons why tar and asphaltum varnishes are so unreliable on tin roofs, and the author knows of no way in which they may be made reliable in a practicable way so that any one who knows how to spread paint can have some sort of definite assurance that it is going to last two years at least.

Rosin more readily impairs the stability of a coating into which it has entered than any of the other resins, and every ounce of it combined with a gallon of paint can be noticed to detract from its wearing qualities.

Many of the so-called paint dryers on the market are nothing more or less than a thin rosin varnish, and in consequence should be avoided. If, however, a dryer is absolutely needed, only oil dryers with thickening or oxygen absorbing properties should be used, and then only in minimum quantities, necessary to meet unavoidable requirements.

British and American Coal Production.

Some important and interesting statistics have recently appeared, which have a bearing upon the coal trade of the two greatest countries in the world in respect to output and distribution. A British blue book containing the statistics for the year ending with December last is most voluminous upon this subject, while our own Interior Department has also sent out the facts and figures gathered by the Geological Survey. It will be the effort of this present statement to give, as succinctly as possible, the salient features in each of the documents.

British Production.

The total output in Great Britain in 1906 was 251,067,628 gross tons. There was exported as coal 55,599,771 tons, as coke (815,224 tons) 1,358,706 tons, as patent fuel (1,338,706 tons) 1,239,488 tons, and the coal furnished to steamers in foreign trade was 18,590,213 tons, making the total exports 76,788,178 tons. Deducting this tonnage from the total production, there was left for home consumption, for all purposes, 174,279,450 tons.

The population of Great Britain was put down as 43,659,124. This divided into the coal "for home use," gives as the coal used per capita 3,992 tons. The average value per ton at the pits is put down as 6 shillings 11.38 pence. The amount of coke manufactured was 19,296,526 gross tons, and the coal used in the manufacture of this coke was 35,402,677 tons. The coke value at the ovens was 14 shillings per gross ton.

The anthracite mined was 3,377,523 tons, and this was valued at 9 shillings at the mines. The number of tons per employee under the classification of "underground" was 360 tons, and for all employees was 294 tons. During the year 1,399,524 tons of coal was used in making 1,513,220 tons of briquettes, valued at 12 shillings per ton at the point of manufacture.

The number of employees was 697,120, of all grades, underground and 171,033 above ground, or a great array of 868,152 persons of all ages. The number employed in

1906 was 23,734 greater than in 1905, while the output increased only some 5,300,000 tons.

It is evident from the statistics that the British miner produces but a small tonnage per annum. There is a growing use of mining machines in Great Britain, but as yet it forms no great feature in the total output and nothing like what is done in the United States. The figures are: Total machines in use, 1136, of which 451 were electrically operated and 685 operated by compressed air. The total of machine mined coal for the year by these 1136 machines was 10,202,506 gross tons.

American Production.

The United States stands at the head of the coal producers of the world. It appears that the total for the year under review was 414,157,278 net tons, divided as follows: Anthracite, 71,282,411 tons; bituminous, 342,874,867 tons. Of the bituminous production there was 46,156,301 tons used for coke making, with a yield of 36,401,215 tons, valued at an average of \$2.52 per ton at the ovens. There was an export trade of 11,112,436 net tons and an import tonnage of 1,943,370 tons.

Estimating the population at 80,000,000 people at the close of 1906, the net result was equal to 5 tons per capita for all purposes. Were one to deduct the large proportion of our people who are not coal users to any particular degree, it can readily be seen that there was an even greater per capita use of coal for industrial and domestic purposes. The exports are mainly to Canada and to Mexico, with a smaller quantity to the West Indies. The imports are from Nova Scotia to New England, and Australia and British Columbia to Pacific Coast ports.

The number of employees of all grades is put at 162,355 persons in the anthracite field and 478,428 in the bituminous fields. As to tons per annum per employee, it is said to be 433 in the anthracite region and 717 in the bituminous districts. The large figures in the latter are due to the great use of mining machines, for there were 10,212 in use, with a total product therefrom of 118,847,527 net tons for the year. This was 35.10 per cent. of the total output of the bituminous mines and a yearly average of 11,638 tons per machine.

Here one finds the two greatest countries in the world, viewed from any standpoint, as coal producers beyond the fear of competition from other countries or from each other. Their total is two-thirds of the world's total, and their grasp upon industrial affairs is therefore paramount. Britain's coal is offered at a low rate, considering the depths from which it is extracted, compared with ours. The export trade of that country is a subject often remarked upon. The millions of tons sent to other countries enable return cargoes of the commodities of those countries to be delivered in Britain, manufactured, and then exported to the entire world.

F. E. S.

The Wharton Steel Company.—The organization of the Wharton Steel Company, with a capital of \$10,000,000, has been effected. Joseph Wharton, Philadelphia, is president; J. Bertram Lippincott, Philadelphia, is vice-president; Harrison S. Morris, Philadelphia, secretary; Henry Werner, Philadelphia, treasurer, and Edward Kelly of Wharton, N. J., general manager. The company will take over all the properties in New Jersey owned by Joseph Wharton, including the blast furnaces at Wharton and Phillipsburg, N. J.; the Wharton, Glendon and Andover mines at Hibernia, N. J.; the Teabo and Allen mines at Rockaway, N. J., &c.

The United States Supreme Court November 8 handed down its decision in what is known as the Greater Pittsburgh case, which involves the validity of the consolidation of Allegheny and Pittsburgh against the adverse vote of the citizens of the former city. The court affirmed the judgment of the Pennsylvania Supreme Court, in holding that the consolidation was legal, declaring that the Federal questions raised were without foundation. This decision removes the last obstruction to the consolidation of the two cities and the creation of Greater Pittsburgh.

French Treaty Prospects.

A New Reciprocity Treaty Probable.

WASHINGTON, D. C., November 19, 1907.—The developments of the past week have gone far to relieve the anxiety of administration officials created by the announcement recently cabled from Paris to the effect that the French Ambassador had notified Parliament that no further commercial treaties would be entered into until the proposed revision of the French tariff of 1902 had been acted upon. This declaration appeared to preclude the approval of the Franco-American reciprocal trade arrangement now being negotiated, but assurances have been received from the French Ambassador foreshadowing an early agreement which will probably be treated as an exception to the French Government's decision. The outcome of the negotiations is being awaited with interest by Senators and Representatives, many of whom are already in Washington for the winter, and the incident has given a decided impetus to the discussion of the plan for the authorization by Congress of a non-partisan Tariff Commission and to the project of a dual or maximum and minimum tariff in connection with the proposed revision of the Dingley act.

Satisfactory Arrangement Likely.

While it can be positively stated that the French Government will not approve the proposed trade agreement, the outline of which the French Ambassador conveyed to Paris early last summer, there is every reason to believe that a satisfactory treaty will be concluded at an early date. The original draft provided for an additional concession on the part of the United States of a 20 per cent. reduction in the tariff on French champagnes, an item of great importance to French producers and of considerable consequence to the United States Treasury because of the loss of revenue involved. Reciprocally, it provided for the concession of the preferential rates of the French tariff upon a large number of American products, including machinery, tools and various metal wares, boots and shoes, &c. It was hoped by the Administration that the French Government would approve this convention, and that upon the Ambassador's return to Washington in the fall the new agreement would be proclaimed. Being negotiated under Section 3 of the tariff law, it would not require to be submitted to the Senate for ratification or to Congress for legislative approval.

The French Government, however, felt unwilling to accept the 20 per cent. reduction in champagne as an adequate offset to the numerous concessions on American products, and it was with considerable difficulty that the American Ambassador at Paris was recently able to secure an extension to December 1 of the existing rate on Porto Rican coffee. Upon the Ambassador's return to Washington, the fact was developed that he was not authorized to conclude the original agreement, but during his conferences with the Secretary of State he signified the willingness of his Government to make a new treaty provided the United States would curtail somewhat the list of products upon which it is proposed to grant the minimum rates of the French tariff. Secretary Root consented to the modification of the original draft, but is reluctant to accept the project submitted by the French Ambassador, because of the material reduction in the category of American products to which minimum rates will apply. It is therefore apparent that a crisis is imminent which, however, it is believed will be safely passed. The imposition of practically prohibitory rates on Porto Rican coffee on December 1 on the eve of the reassembling of Congress would no doubt cause much bad feeling, and would certainly be followed by the introduction of measures retaliating upon French commerce. It is clear, therefore, that the situation requires the exercise of the highest diplomatic skill on the part of the State Department officials and of patience and forbearance in every quarter.

Tariff Commission Plans.

The proposition to create a nonpartisan tariff commission to revise the Dingley act will be made the sub-

ject of several measures to be presented early in the coming session, including at least one providing that the commission shall arrange a dual or maximum and minimum series of schedules. The general proposition of a double column tariff has been indorsed by the majority leaders of both Houses, but on two widely differing bases. The tariff reform element, including certain Senators and Representatives from New England and the Middle and Northwest, proposes to continue the Dingley duties as maximum rates and to authorize reductions of varying percentages therefrom as minimum or conventional rates. Under such a tariff the President would be at liberty at any time to negotiate and proclaim a reciprocity agreement granting the minimum rates in whole or in part to any foreign country in exchange for adequate reciprocal concessions.

But the dual tariff of the high protectionists is framed on an entirely different plan. They propose to maintain the Dingley rates as a general tariff and to authorize the President to increase them by various percentages, such increases to apply only to the products of countries discriminating against the commerce of the United States. Such increased rates would form a retaliatory, rather than a reciprocal, schedule, and while the enactment of such a law would place a powerful weapon in the hands of the President, it would unquestionably invite tariff wars and their resultant commercial disturbances. An argument in favor of a retaliatory tariff now being used here is the fact that the new French tariff is understood to be materially higher in its maximum rates than the law now in force. The margin between maximum and minimum rates is also understood to be greater, and it is urged that if any American products are to be subjected to the new maximum tariff it will be necessary to provide the Administration with some means of compelling fair treatment.

Tariff legislation changing rates during the coming Congress is not anticipated by any experienced observer here, nor is it believed that the Senate will give its approval to new reciprocity treaties, with the possible exception of an agreement with Cuba to take the place of that which will expire in December, 1908. The plan for a tariff commission, however, is already attracting much attention and some of its advocates are sanguine enough to predict that it will be adopted by Congress in time for its members to begin their work soon after the next Presidential election. While it is only fair to say that this is a decidedly optimistic view, there can be no doubt that the project for a commission will receive serious consideration in both Houses of Congress.

W. L. C.

Graphite Paint in Increasing Use.

The United States Graphite Company, Saginaw, Mich., says that even the most casual observer cannot have failed to notice that within the past decade there has been a radical change in the color of the coatings applied to railroad bridges, viaducts and other steel structures for the purpose of protecting them from corrosion and the elements. The change has been from reddish brown to grayish black. The reason for this, it is claimed, is that the most exhaustive research, theoretically and practically, has disclosed the fact that the natural form of carbon, graphite, is now recognized as the pigment best meeting all of the many and varied requirements essential to the production of paint that will effectually protect under all conditions the surface which it covers.

Graphite is an inert substance, absolutely unaffected by extreme heat, frost, steam, water, sulphur fumes, acids, alkali, brine or, in fact, by any climatic or chemical condition. These properties, together with its natural affinity for oil, its density, the ease attending its application and the resulting saving of labor, its remarkable covering power and the consequent reduction in first cost and last, but not least, its long life, which eliminates the annoyance and expense of frequent repainting, render it the ideal paint for either the primer or weather coats. But, says the United States Graphite Company, to give this service in the greatest degree it must be pure, finely pulverized and thoroughly ground in the best of linseed oil.

THE IRON AGE

Established in 1855.

New York, Thursday, November 21, 1907.

Entered at the New York Post Office, as Second Class Mail Matter.

DAVID WILLIAMS COMPANY,	14-16 PARK PLACE, NEW YORK	PUBLISHER
DAVID WILLIAMS,	- - - - -	PRESIDENT
CHARLES KIRCHHOFF,	- - - - -	VICE-PRESIDENT
RICHARD R. WILLIAMS,	- - - - -	TREASURER
GEO. W. COPE,	- - - - -	SECRETARY
CHARLES KIRCHHOFF,	- - - - -	{ EDITORS.
GEO. W. COPE,	- - - - -	
A. I. FINDLEY,	- - - - -	
RICHARD R. WILLIAMS,	- - - - -	HARDWARE EDITOR.

The Work of Employers' Associations.

The recurring annual conventions of organizations like the National Metal Trades Association and the National Founders' Association often prompt the idea that the labor situation has really no new phases—that one cycle of alternating success and defeat in the clashes of unions and employers follows another in endless repetition. It might be thought, moreover, from a surface view of things, that in good times when employers are too busy to fight, the unions have their way, and then in turn, when work slacks off, the employer is able again to take charge of his own shop. Very little that the public sees of the conflict between employers and modern unions of the radical type—and there are few that are not radical enough to want to control the instruments of production in their respective trades—suggests that the so-called labor problem is growing to be less of a problem. Strikes are still frequent, even in unions that have been long enough in the field to know the fearful wastefulness of a perpetual state of war, and that should have learned the wisdom of a policy of few strikes, and those successful ones.

We have commented from time to time on the effect upon the ironworking trades of the work carried on by the National Founders' Association and the National Metal Trades Association. For 10 years, with varying fortunes, these two organizations have exerted an influence upon labor conditions in the foundries, machine shops and other metal working establishments in the United States. The former has now a membership of 433 firms operating 486 foundries and employing about 23,000 men. The National Metal Trades Association has a membership of over 800 firms employing 65,000 men. The significant fact about both associations is that from having been in their early days on a conference footing with the molders' and machinists' unions, respectively, they now have no official relations with those unions. Taken by itself this fact might indicate that no progress has been made toward a condition in which peace rather than conflict should be the rule in the metal working trades, but rather that the solution of the labor problems in these trades had been put farther off. Without going anew into detail as to the policy of the two organizations in recent years, which has been discussed heretofore in these columns, it is to be said that it is of the utmost significance that they have succeeded in breaking away from the old-time alternation of successful and unsuccessful strikes in foundry and machine shop. That both organizations have made great headway in the past two years and have successfully resisted attempts to es-

tablish union control of many shops in the midst of the greatest pressure of demand the two industries have ever seen, is striking testimony to the strength of the principles on which their operations are based.

What appeared uppermost in the plans of the National Founders' Association, as these were presented at the convention of last week in New York, was not simply to resist unjust demands that might be made from time to time by organized labor. It was rather to establish such conditions in the foundry industry as should make the restoration of old time union limitations impossible. It was argued that if foundries deserted by union workmen in a time of abounding prosperity could be put in operation again, not by professional strike breakers, but by men willing to be trained in the operation of molding machines; and if such shops, under the patient training of these men, could be put on a better basis, both from the standpoint of proprietor and workman, than had ever existed under the old régime, such a result must be counted a great and permanent gain. The officers of the National Founders' Association have asserted over and over the futility of perpetually fighting strikes. They consider that the organization is making poor use of its strength if it becomes simply a fighting machine. They would make it a strong, permanent educational force. They would maintain the open shop, free from union limitations as to apprentices and output, by making the conditions of the employee better than he could secure through dependence upon the union. The campaign of education to that end is not one sided. It includes the education of employers as well as employees. Perhaps the employers' associations would increase their influence if they would make it plain that they will tolerate as little the unfair employer as the unfair union.

In the trying time upon which the foundry industry and all industries have entered, the National Founders' Association will have opportunity to demonstrate that it is prosecuting no opportunist campaign, and seeking no temporary advantage from untoward conditions. Rather it will have the chance of its career to show that its policy is constructive and permanent and that in seeking the improvement of foundry conditions it contemplates nothing less than the permanent betterment of the condition of the foundry employee.

Maintaining Machinery Prices.

Some machinery dealers are facing the temptation to cut prices. Having large stocks on hand, with collections slow, the natural tendency would be to convert machinery into cash. Up to the present time the inclination has been to hold to the prices ruling the past year and ratified by the sentiment as expressed at the recent meeting of the National Machine Tool Builders' Association. The danger of indiscriminate, unorganized price cutting, of competitive bidding in which the buyer has all the advantage, constitutes no new subject; we have had occasion to touch upon it from time to time. But it may be well to emphasize again the difficulties and losses that the trade would have to face later should the dealers begin to break away from the lists agreed upon between them and the manufacturers whom they represent, or should the manufacturers adopt a policy of "anything to get business."

It is a fact that the market for machine tools is not increased during a period of partial stagnation by lowering prices. There is just so much business to be had and no more. Lower cost to the consumer does not influence him to any appreciable extent in increasing his orders any more than high prices curtail his buying when

business is rushing. There is already a movement on the part of buyers, especially of purchasing agents, to "bear" the market. They believe that lists can be forced down, and realize that if they can produce a beginning of price cutting they will have things their own way, even after the general market begins to rise again. In other words, the prices that will prevail with the renewed demand, which many observers believe will have its inception in the not distant future, will be governed to an important degree by the firmness or lack of firmness with which manufacturers and dealers meet the situation to-day. If prices are now permitted to fall they will have to work up gradually to their proper level as the market broadens. If they are maintained now they will be where they should be when sales are renewed in larger volume. The dealer and manufacturer will get the benefit of full profits on the increasing business in the one case; in the other they will again have to go through the long and hard task of advancing prices, with the constant bickerings with customers that must always characterize the marking up of lists. It should not be lost sight of that the country is probably close to the bottom of its present financial depression, and that the future should bring brighter days to the trade.

If it should ever become necessary to reduce machine tool prices the matter should be carefully considered by the trade as a whole and co-operation sought, that the proceeding may be no more costly than necessary. As for cutting prices at this time, the little business available would result in no great amount of conversion of machinery into ready money. Business is slack, of course, and in addition customers are not paying spot cash. Consequently little, if any, gain would be accomplished even for any one solitary dealer who should go after business regardless of lists, while all the rest of the trade maintained them.

The attention of the trade is drawn to the fact that in iron and steel lines the influence of the large producers is being exerted toward the maintenance of prices. Blast furnaces are being blown out and rolling mills and steel works are being shut down to avoid the accumulation of stocks of the manufactured product, which would inevitably result in general price cutting. With the effort in these lines to impart some stability to prices, an example is set to other classes of manufacturers to hold fast to what they have and wait for better trade conditions.

Open Hearth Steel in Great Britain.

The recently published statistics of steel production in Great Britain in the first half of the year emphasize anew the rigidity of the British iron industry, when comparison is made with the wide swings shown by the statistics of but a few years in the United States. Yet there has been a remarkable development in the British steel industry in the past three years, when it is contrasted with the monotonous pace of the five or six years preceding 1904. We refer to the 50 per cent. increase in the rate of production of open hearth steel in 1906 and 1907 over the average for the years 1903 and 1904. While British Bessemer steel production has been practically stationary, the effort has been plainly to utilize to the largest extent the phosphoric ores of the Cleveland District, looking to an increased independence of the high priced Spanish supply, with its far from inexhaustible tonnage.

Comparisons of the positions of Bessemer and open hearth steel in the United States have been common, in view of the sensational advance of the latter toward parity with the Bessemer product. An interesting story

of the march of the open hearth process in the United States is told, moreover, by contrasting the statistics for this country and Great Britain in recent years, with particular emphasis on the fact that only so lately as 1900 did American open hearth steel production first exceed that of Great Britain. For comparison the Bessemer and open hearth steel outputs of the two countries are given for a series of years, five-year intervals being taken from 1885 to 1895, inclusive, with yearly statistics from 1899, when British open hearth steel production last exceeded that of the United States:

Steel Production in the United States and Great Britain.—Gross Tons.

	Bessemer.		Open hearth.	
	United States.	Great Britain.	United States.	Great Britain.
1885.....	1,519,430	1,304,127	133,376	583,918
1890.....	3,688,871	2,014,843	513,232	1,564,200
1895.....	4,909,128	1,535,225	1,137,182	1,754,737
1899.....	7,586,354	1,825,074	2,947,316	3,030,251
1900.....	6,684,770	1,745,004	3,398,135	3,156,050
1901.....	8,713,302	1,606,253	4,656,309	3,299,791
1902.....	9,138,363	1,825,779	5,687,729	3,083,288
1903.....	8,592,829	1,910,018	5,829,911	3,124,083
1904.....	7,859,140	1,781,533	5,908,166	3,245,346
1905.....	10,941,375	1,974,210	8,971,376	3,838,072
1906.....	12,275,253	1,907,338	10,970,998	4,554,936

Roundly, while in Great Britain the open hearth steel output last year was two and one-third times that of Bessemer steel, in the United States it was about nine-tenths of the Bessemer total. In the first half of 1907 the British output of Bessemer steel was 1,068,972 tons, and of open hearth steel, 2,337,794 tons, or a slight increase in both cases upon the rate of production in 1906. The contrast in the records of the two countries is brought out sharply by the statement that in 1885, the first year in the table, the open hearth steel produced in Great Britain was 31 per cent. of the total of Bessemer and open hearth, while in 1906 it was 70.5 per cent. of the total. In the United States open hearth steel was 8 per cent. of the total in 1885; last year it was 47.5 per cent. of a total over three and a half times that of Great Britain.

Attention has been directed anew to the production of open hearth rails in Great Britain by the order recently placed by the Great Western Railway Company with an open hearth rail mill. Last year 94,626 tons of open hearth rails were rolled in Great Britain against 854,740 tons of Bessemer rails. In the United States about 200,000 tons of open hearth rails were rolled out of a total of about 4,000,000 tons. While there is no such complaint of the Bessemer rails produced in Great Britain from imported ores that exists in the United States against Bessemer rails from domestic ores, the increasing use of the continuous basic open hearth process by Northeast coast steel works in England engaged in rail manufacture should be heard from in the rail statistics. The agitation for open hearth rails in the United States will no doubt have an effect on international trade in such rails. In general, as in the United States, the bulk of British open hearth steel has gone into plates, shapes and bars, the last named including prominently sheet and tin plate bars.

An interesting fact comes out in the comparative study of the steel statistics of Great Britain and the United States. In 1880 the American Bessemer steel output first exceeded that of Great Britain. In 1890 the American pig iron output was greater for the first time. In 1900 the American open hearth steel output first passed that of Great Britain. But here is the contrast: Three times after 1880 (in 1881-83), the British Bessemer output again exceeded our own. Once after 1890—namely, in 1896—British pig iron output was greater than ours. But our open hearth production,

after passing that of Great Britain, was never overtaken. Moreover, while in the past 20 years our Bessemer steel production has repeatedly fallen behind its own record, there is not a year in that period, whether times were good or bad, when open hearth steel did not exceed all its previous records.

A Test of Battleship Repair Shops.

The cruise of the battleship fleet to the Pacific Coast will afford a severe test of resources for repair work during extended periods, while the ships will be cut off from the larger facilities of naval stations. Naval officers believe that this is one of the important considerations of the long and costly voyage, and it is maintained by some of those who have given thought to the subject that the cruise will result in radical changes in repair equipment, with the probability of the bestowal of greater importance to this department of a war vessel. The result would include, quite possibly, material extension of the space allotted to the machine and blacksmith shop, which is very small considering the enormous complication of mechanism that may need to be replaced or repaired. The task that the shop of the individual ship may be called upon to perform may be so much beyond its equipment that it would be out of the question to attempt to install in a war vessel machinery sufficient for the purpose. In this event attention would be turned to repair ships, perhaps resulting in the development of a new class of this type of naval vessel—a great floating machine shop, with facilities for doing practically all of the work of the naval station not requiring the docking of a vessel. But it is held to be equally possible that while the demand on the ship repair shops will be something in excess of their capabilities, it may not be beyond the point of remedy by their enlargement and better equipment.

Under service conditions in time of hostility the necessity of quick repair work may be readily realized. A warship must be to an extent sufficient unto itself. Though it may be found more advantageous to leave most of this work to repair ships, in order to save as much space and weight as possible for more directly necessary machinery and implements, still it must be considered that a ship must depend upon itself at times. Repair ships cannot be available always; probably in time of war they would seldom be on hand in the emergency, especially with the main line of battle, represented by the first-class battleships, or with the secondary line, if it may so be termed, of the armored cruisers. Ships must frequently be away from naval stations under conditions which tend to make quick and efficient repair work a vital necessity, if fighting efficiency is to be maintained.

There is a difference of opinion as to whether the best use has been made of the repair shop space as it now exists. It is said that the best tools are not always purchased, because the contractors do not care to incur the additional cost of the most expensive machines of the several types required. Some of this talk may be laid to disappointment in not sharing in contracts for machinery, but probably some of it is well based, because of too economical buying on the part of the contractors, for machine tools enter into the general contract and the shipyards have to figure closely. It is not that really inferior machinery is installed in the ships, but that in some cases better could be had in the market.

The voyage of the great ships will tell the story in detail. The naval experts whose duties lie in this direction have the opportunity in mind, and when the cruise

is ended they will be in possession of valuable data from which to make their plans for the repair shops of future ships or for changes in the shops of existing vessels. Weaknesses will develop, no doubt. It would be astonishing if it were otherwise, for no such test of endurance was ever imposed upon so great a fleet. The ships must keep together if the purposes of the voyage are to be carried out. The weak unit of the fleet will govern the movement of the whole. As an outcome it would not be surprising if builders of machine tools and other equipment needed in repair work would find an enlarged market in the navy.

CORRESPONDENCE.

The New Car Demurrage Rules.

To the Editor: My attention has just been called to an article in *The Iron Age* of November 14, concerning the new car demurrage rules, which I have carefully read. I am the executive officer of two operations that manufacture coke and ship it to iron furnaces, and consequently am somewhat familiar with their requirements and conditions.

I can readily see what a great hardship these rules will be to the blast furnaces if they are put in operation. Their supplies must be delivered regularly and in such daily quantities as their consumption requires. If the railroad companies would supply the cars regularly for loading, and afterward deliver them to the furnaces in a reasonable time, I suppose there would be no particular hardship upon the consignees and none of them would seriously object, but as we all know the railroads frequently delay material while in transit and this delay often results in making a very heavy delivery in one day, and in this event it is impossible for the furnaces to unload this material in the required time.

Now if the railroads would supplement this rule with another clause making themselves liable for demurrage for all such delays caused by them, it would seem, in our judgment, more equitable, but where the consignee has to pay the penalty, in many cases caused by the non-performance of a duty that the common carrier owes him, it is, in my judgment, entirely unfair and out of reason, and is a hardship that I hope the Interstate Commerce Commission will not approve of.

There has been a great deal said and printed of late about the rash acts of various Legislatures in their attitude against the railroads, but can we wonder at the state of the public mind when the constituents of these legislators have been from time to time subjected to arbitrary rules and rulings imposed upon them by the railroads? It is but human nature, and as the saying the world over goes: "The worm will turn when trod upon." I say this in no unfriendly spirit to the railroads, as I have none, when they do their duty and act fairly to the people. MANUFACTURER AND SHIPPER OF COKE.

The plant at East Carnegie, Pa., formerly operated by the Damascus Nickel Steel Company, has resumed operations after an idleness of about a year. The plant was bought some time ago by the Carbon Steel Company, which will operate it in the manufacture of Damascus grades of steel and also of crucible and common grades. A. M. Johnston will be works manager and J. C. Jamison will have charge of the chemical treatment of the steels for the Damascus grades. The Carbon Steel Company expects to have the whole plant in full operation in a month, and has large orders for safe steel in angle forms and enough orders for other kinds of steel to keep the 16-in. mill busy for some time to come.

The McWane Pipe Works, manufacturer of cast iron pipe, whose headquarters are at Lynchburg, Va., with branch office at 220 Broadway, New York, issues monthly an interesting pocket memorandum book entitled "Monthly Pipe Parley." Each issue gives an illustration of some matter of interest to the trade, with blank leaves constituting a diary for the month.

PERSONAL

G. L. L. Davis, formerly general sales agent in New York City for the General Castings Company, Verona, Pa., has resigned to become manager of sales in the railroad department of the United States Metal & Mfg. Company, New York City. The sales departments of the General Castings Company have been centralized and are now in charge of H. J. Kock, assistant general manager at Verona. J. A. Flynn has been appointed Pittsburgh sales agent for this company, with headquarters at Verona, Pittsburgh.

George Stahlnecker, who has been superintendent of the blooming mill for the New York State Steel Company, Buffalo, N. Y., also during its assembling, resigned November 1 to accept a position with the Pittsburgh Steel Company, Monessen, Pa., December 1.

E. W. Moore, who for many years has been manager of the Galena Iron Works Company, Platteville, Wis., has recently accepted a position as a department manager of the Ingersoll-Rand Company.

Nelson W. Dingwall, who has been auditor of the National Metal Trades Association, has been elected secretary of the association as successor to Robert Wuest. Mr. Wuest some months ago was elected commissioner and had been filling both positions.

C. Bermingham, managing director of the Canadian Locomotive Company, Ltd., Kingston, Ont., has just returned from a European trip.

Warren R. Clifton, formerly general superintendent of the blast furnaces of the Carnegie Steel Company at South Sharon, Pa., has resigned to become superintendent of the new blast furnaces of the Jones & Laughlin Steel Company, at Aliquippa, Pa. Mr. Clifton has been succeeded at South Sharon by Elsie Orr, who has been assistant general superintendent of these furnaces.

W. H. Crehan of Youngstown, Ohio, for the past year superintendent of the tube mill of the Montreal Rolling Mill Company, Montreal, Can., has resigned, effective January 1.

J. H. Sheadle, secretary of the Cleveland-Cliffs Iron Company, and James Corrigan of Corrigan, McKinney & Co., Cleveland, have been appointed by the Governor of Ohio to represent the State at the Rivers and Harbors Congress in Washington, December 4-6.

I. B. Williams, sales agent of the American Sheet & Tin Plate Company, with offices in the Crocker Building, has returned to San Francisco after spending a few weeks in the East.

Louis Piedboeuf of Liege and Oscar Rueping, manager of the tube works of J. P. Piedboeuf & Co. of Dusseldorf-Oberbilk, Germany, are now in this country.

R. D. Day, formerly connected with the publicity department of the Westinghouse Machine Company, East Pittsburgh, has resigned to accept a position with the Mesta Machine Company, Pittsburgh, in the same capacity.

William Lodge, F. B. Dyer, J. L. Shearer, Fred Geler and S. H. Schneider of Cincinnati have been named as members of the Ohio representation to the convention of the National Society for the Promotion of Industrial Education, which meets in Chicago, December 5-7.

Wm. T. Johnson, who has been the district sales agent in Cincinnati for the Jones Underfeed Stoker Company, Chicago, for the past two years, has been transferred to the Buffalo agency, a very important one in the company's business.

F. B. Winslow, assistant auditor of the American Steel & Wire Company at Cleveland, Ohio, has been appointed auditor of the Tennessee Coal, Iron & Railroad Company at Birmingham, Ala., succeeding W. A. Green.

H. W. Hendrickson, formerly with the Jarecki Mfg. Company, has opened an office in 1206 Park Building, Pittsburgh, as manufacturers' agent, and has been appointed representative of the G. M. Davis Regulator Company, Chicago, steam specialties; Williams Tool Company, Erie, Pa., pipe machines; Pittsburgh Valve & Fittings Company, Barberton, Ohio, valves and fittings.

OBITUARY.

M. J. MULCAHY, Havemeyer Building, New York, died of paralysis November 19, after an illness of four days, aged 60 years. He was born in New York, and lived in this city his entire life. He was brought up in the plate trade, and was agent for the Worth Brothers Company and its predecessors for 30 years. Few men were so thoroughly conversant with the details of the plate business, and his devotion to the interests intrusted to his care was most praiseworthy. He leaves a widow and one son, John J. F. Mulcahy, who was recently elected to the Board of Aldermen of New York City, and is the youngest member of that body. He has been actively associated with his father for 10 years, and is well qualified to succeed him.

RICHARD D. HURLEY, manager of the Pittsburgh office of the Independent Pneumatic Tool Company, Chicago, died of heart trouble after a brief illness at Chicago, November 5, aged 39 years. He was buried at Galesburg, Ill., his old home, November 7. He was a brother of John D. Hurley, vice-president and general manager of the Independent Pneumatic Tool Company, and of Edward N. Hurley, organizer and former president of the Standard Pneumatic Tool Company. He was unmarried. His 10 years' connection with the pneumatic tool business had brought him into intimate contact and close relation with a wide range of manufacturing interests.

STORM BULL, professor of steam engineering in the University of Wisconsin, Madison, Wis., died November 18. He was a nephew of Ole Bull, the famous Norwegian violinist, and was born at Bergen, Norway, October 20, 1856. He was graduated from the Federal Swiss Polytechnic Institute, at Zurich. He came to this country in 1885, and five years later became an instructor at the University of Wisconsin. He was the author of several scientific works.

WILLIAM H. AINEY, Allentown, Pa., president of the Second National Bank, oldest member of the Lehigh County bar, and president of the Lehigh Iron & Steel Company, died November 12, aged 72 years. For several years he published the Lehigh Register, and for half a century was closely allied with the financial and industrial life of the Lehigh Valley.

THOMAS J. TAPP, Louisville, Ky., died November 8, aged 78 years. He was a native of South Carolina, but had been in business in Louisville since 1853, when he became interested in the wholesale hardware trade as partner in the firm of Chamberlin & Tapp, continuing until the Civil War. He then engaged in the wholesale dry goods trade, from which he retired about 1882 to organize the Central Coal & Iron Company, of which he was for many years vice-president and manager, until obliged to give up business by ill health.

◆◆◆

The Westinghouse Machine Company.—It is stated that plans are being considered by creditors of the Westinghouse Machine Company of Pittsburgh for an application to court for the discharge of the receivers of that company in the near future. The basis of this petition will be the appointment of a creditors' committee which will act as advisory to the management, and assist in the clearing up of any complications in the affairs of the concern. These were brought about through its close affiliation with the Westinghouse Electric & Mfg. Company. It is stated that the Westinghouse Machine Company is and has been doing an enormous business and on a profitable basis. In fact, it is said, the company will be able in a very short time to pay all of its debts and be absolutely free. The company has bonds in its treasury sufficient to guarantee all of its obligations, and these will likely be put up as security in the new arrangement. With the business of the company under the direct and personal management of its officers, the creditors will be the more quickly paid, according to the opinion of the management of the company, and all persons concerned will be benefited.

Ore Prices Being Discussed.

DULUTH, MINN., November 15, 1907.—There is some talk of ore prices for next year. The opinion here seems to be that Bessemer ores will be reduced slightly, though possibly not more than 25 cents a ton, while non-Bessemers may be cut about 50 cents. This is a slight reduction and will bring Mesaba Bessemers down to \$4.50 and Old Range to \$4.75, while Mesaba non-Bessemers would be \$3.50 and Old Range \$3.70, all at lower lake ports. But it is rumored that an attempt will be made to drop the guarantee for standard Bessemers from 56.70 per cent. iron to even 50 per cent.

It is doubtless quite true that Bessemer ore shipments this year have fallen below guarantees, in many cases quite seriously, so that large penalties have accrued against shipments from many mines, but that any such cut in the guarantee is probable may be considered remote. The mines producing Bessemer ores do not show any material decline in their grades, especially of the grades of those parts of the mines producing ores of that class, but this year the demand for tonnage has been so insistent and the production so large that ore has been sent down that might otherwise have been held back, and mixtures have not been carried out that would have brought up the tonnage to guarantees. It takes time to make a mine mixture agree with the set standard; ores sometimes will run too high and at other times too low, depending on the part of the mine from which they are taken, and the custom is for such proportions of the total shipment to be drawn from certain parts of the mine as to make the guarantees remarkably accurate. This means the shifting of shovels or the retaining of shovels where they may be needed later, though idle for a longer or shorter period, and this cuts their efficiency. In a season like the present, when tremendous tonnage has been demanded, all the shovels will naturally be used if possible. Grades are a secondary consideration.

End of Shipments Approaching.

Shipments have been kept up to the close of this week, but may cease any day now if very cold weather comes on. Shipments will then cost more, for it will be necessary to thaw the ore in cars and to put it through the docks at once. Cars are not, therefore, provided for shippers till the ships that are to carry their ore are in the harbors and ready to load. Railroad companies do not propose to be caught as they were two years ago, when ships reported on Lake Superior did not arrive, and 100,000 tons of room was wrecked at this end of the lake.

Thawing has commenced in a small way, some cold nights having frozen carloads of wet ores. To the close of the season efforts will be made to maintain shipments at the maximum, and, when they cease, to stop them altogether and quickly. But railroad men do not look for a cessation till rather late; they claim the ore is wanted, and that the orders are still for as long and as rapid shipments as possible. There was a let-up for a few days this week, but only on account of the fact that shipping was bunched at the lower end of Lake Superior and on other lakes by reason of bad weather. They have their ore thawing apparatus all in readiness for use, and will be expected to use it for as long a fall season as usual. That being the case, we may look for a very heavy tonnage this month and some movement in December.

The New York State Steel Company of Buffalo,

which has taken the protection of a temporary receivership, is operating its mines as usual, and will ship some more ore this fall. Its shipments this year, however, will be materially less than expected, for its most important mine, the Kellogg, has been unable to get any ore down, and everything has come from a smaller and more recent acquisition, the Larkin. Opening the Kellogg mine has been seriously delayed by quicksand over the ore, and it has taken several months to reach ledge; but this has now been done and the drills are working in very hard jasper; so hard, indeed, that progress is exceedingly slow and difficult.

The sinking of this shaft has borne witness to the unreliability of drill hole exploration and drill hole computations. The shaft is sunk on the line of a hole which went for a considerable distance through clay. No sand was reported, but the work has shown sand nearly all the way down from the surface. Ten feet from the shaft was another drill hole, which showed a large body of ore with its upper surface many feet above the point where the shaft cut rock. This ore gave no indication by its bumpy character or otherwise of the near presence of rock, and the presence of exceedingly hard and hungry looking jasper was a great surprise to the management. This company has been exploring on the Menominee range and may recommence operations there later, for it considers that the most favorable lake field for the discovery of such ores as it requires in its Talbot open hearth furnaces.

Exploration on the Menominee.

There is, indeed, a very general feeling that the Menominee and Crystal Falls country is exceptionally favorable for exploratory operations, and those concerns that have been most active there—Corrigan, McKinney & Co., Pickands, Mather & Co., and some others—have profited remarkably. Half a dozen really large mines have been opened and developed into important shippers during the past few years, and there are several others that look as though they might also be large when more thoroughly explored. The formations are wide and continuous, the ore bearing member persistent and deep and without much faulting, while the general rule as to options and royalties is moderate and fairly favorable to the firm that pays out the money and takes the risk.

In this respect the Menominee is in considerable contrast to the Mesaba, where, especially of late, excessively high royalties have been demanded, so much so that explorers are deterred from entering the district. It is to some degree this difference in terms that is making the Menominee a more satisfactory region for operations than the Mesaba, while other reasons are the increasing use of non-Bessemers for steel making, the advantage the Menominee has over districts further west in the matter of freights to Lake Erie, this amounting, as compared to the Mesaba, to 55 and 60 cents a ton, and the large areas still available for and favorable to explorations. Corrigan, McKinney & Co. have been testing the formation running west from their mines at Crystal Falls, and have developed it for some miles, continuously, at points along which there are probabilities of the existence of ore bodies. Many of the finds being made and looked for, will doubtless be small deposits, but there is abundant room for large and good mines, such as have been found within the past few years, and the coming year should show a material increase in developed tonnage there.

More mines have ceased operations during the week past on all ranges, though on the Mesaba the larger properties are nearly all still busy. Biwabik mine has closed—it is an open pit—with a record of 740,000 tons for the season. This compares with 807,000 tons last year, and a record production of a trifle over 900,000 tons.

Near Crystal Falls all of the Corrigan mines, with the exception of the Tobin, Dunn and Crystal Falls, have ceased shipments and begun stocking for the coming year. These include the Great Western, Fairbanks, Lamont, Kimball and Armenia, most of them small properties. The general feeling among shippers seems to be that as soon as sold ore is forwarded there will be nothing more sent down, leaving the docks free from unsold ore next spring.

The Penn Iron Mining Company is sinking a new shaft at its Curry mine. As the ground is very "quick," it is going down slowly. The Buffalo & Susquehanna Mining Company is to sink an exploratory shaft on the old North Dunn, now called by it the Fesing. Former exploration proved a rich iron bearing formation. The same interests are to sink on the Ohio, near Michigamme. The Groveland Mining Company is to sink a shaft on its property near Randville. The Oliver Iron Mining Company has bought the Spencer explorations near the Penn mines, and will continue the encouraging explorations carried on there the past two years. Captain Spencer

will continue explorations on other tracts that he has secured in the same general neighborhood.

Oglebay, Norton & Co., who have been stripping at their Empire mine, Cascade District, for some time, have stopped, the work being completed. The mine will be operated as a milling proposition, and will be open during the winter. Its ore is hard, and, like most of that in the same district, will be crushed. The Longyear & Bennett interests are still exploring in the Palmer District, near the Cascade, and are getting a large tonnage of medium and low grade ores.

The Antoine Ore Company, Menominee range, has ceased shipments, with a total tonnage for the season of about 101,000. During the winter a considerable new area of stripping will be undertaken, a new shaft house built, some drill exploration done and other improvements carried out. The old Cornell property, which was a shipper of Bessemer ore, will also be explored carefully soon.

Other Interesting Operations.

The Minnesota Iron Company, subsidiary of the Steel Corporation, operating the old hard ore mines on the Vermillion range, has recently made some important finds on lowest levels, and is now opening the deposits by long drifts and crosscuts. This find was discovered by drill exploration from the bottom of the mine, and lies some 1200 ft. underground. The fact that ore was found so deep and in what appears to be a very large and important body, is of the utmost interest to those developing mines in that formation. The Minnesota was long thought to be on the decline, and its annual shipments have run down from about 600,000 tons to about 100,000 tons. That was of non-Bessemer ore, though comparatively high in iron. The new finds are of most splendid ore, high in grade, though hard.

At the Canisteo mine stripping went forward in October at the rate of more than 10,000 cu. yd. per day, and in the entire month 350,000 yd. were moved. Experiments with the washing of ore at this mine have been carried along successfully, and the construction of a large and powerful washery will begin very shortly. At the town of Coleraine, the sewer and water systems are going in, streets and concrete sidewalks are being built, an electric lighting plant is under contract, and a large number of buildings are in progress of construction.

Currency Scarce in Mining Districts.

President T. F. Cole of the Oliver Iron Mining Company, which operates on all ranges of Lake Superior and has a monthly payroll of about \$1,200,000 on the lake, has sent a circular to employees, in which he says: "The Oliver Iron Mining Company, notwithstanding that it has large bank balances, is unable to obtain currency in amounts to make cash payments of payrolls. For this reason it will meet current rolls with the payment of 20 per cent. in cash and the remaining 80 per cent. in checks of the company for small denominations. These will undoubtedly be regarded and received as cash by merchants and others. It is believed that little inconvenience will result to any employee from this expedient, adopted, not because of lack of funds, but by reason of the inability of banks to supply currency."

The Duluth, Missabe & Northern and the Duluth & Iron Range railroads, associated companies, with joint payrolls of about \$500,000, issued similar statements and made their payments in the same manner. Most of the mining companies of the lake region have followed a policy as nearly like this as their individual conditions permit.

D. E. W.

Vollkommer & Hagan, engineers and contractors, Empire Building, Pittsburgh, have received a contract from the Union Switch & Signal Company, Swissvale, Pa., for 32 heating furnaces, and for connecting their flue work to a 250-hp. Wickes waste heat boiler, to be installed in forge and blacksmith shops; also covering three cupolas in the foundry. This equipment will be installed in the new addition to its plant recently erected by the company.

The Ohio Valley Improvement Convention.

The thirteenth annual convention of the Ohio Valley Improvement Association, held at Wheeling, W. Va., November 14 and 15, evidenced the strong and persistent endeavor which this association has been and is continuing to put forth to secure a continuous 9-ft. stage of water in the Ohio River from Pittsburgh to Cairo. There was a good attendance at all sessions, not only of river men, but representative men in other callings, and there were many addresses by members of Congress and others. The following committees were appointed: Resolutions, W. P. Hubbard, chairman; Nominations, J. M. Blair, chairman; Miscellaneous Business, Pink Varble, chairman. Each committee had a large membership.

The annual report submitted by President John L. Vance was a comprehensive document reviewing the work of the year. In the opening of the report he commented on the fact that the entire country is now awakened to the importance and necessity of improved waterways, particularly the great inland waterway. He took pride in attributing this awakening in large part as due to the work of the Ohio Valley Improvement Association. He enumerated certain appropriations heretofore made and congratulated the association on the benefit these would produce in enhancing the commerce of the Ohio. The amount of money appropriated by the act of March 2, 1907, is larger than that for a like purpose in any preceding River and Harbor bill in the history of the country.

President Vance referred to the creation by President Roosevelt of what is known as the Inland Waterways Commission and explained its personnel. The President's appointment of this commission for the purpose specified is believed to be the most important in its bearings of any he has taken during his administration for the benefit of the commercial interests of the country, and he thought that in this action President Roosevelt had been largely influenced by the results of the convention of the National Rivers and Harbors Congress, held at Washington, December 6 and 7, 1906. The work of this commission will be watched with interest by the people of the entire country.

The report of the secretary and treasurer, J. F. Ellison of Cincinnati, showed that the finances were in excellent shape and that the association has abundant resources to carry on its aggressive campaign.

The following officers were elected: President, John L. Vance; secretary-treasurer, J. F. Ellison. Vice-Presidents: W. B. Rodgers, Pittsburgh; James A. Henderson, Pittsburgh; John H. Jones, Pittsburgh; Hullinen Quarrier, Wheeling; D. A. Mossman, Huntington; B. W. Peterson, Wheeling; B. S. Pope, Parkersburg; Albert Bettinger, Cincinnati; H. A. Marting, Ironton; D. J. Sinclair, Steubenville; J. E. Williams, Portsmouth; W. W. Hite, Louisville; W. A. Patton, Catlettsburg; S. A. Fowler, Paducah; W. C. Williams, Louisville; F. B. Posey, Evansville; M. C. Garber, Madison; Charles Hegewald, New Albany; I. H. Odell, Evansville; George Parsons, Cairo; J. C. Willis, Metropolis; E. A. Smith, Cairo; J. F. Browinski, Joppa. Executive-Finance Committee: Edwin C. Gibbs, chairman; John L. Vance, George Puchta, O. F. Barrett, Paris C. Brown, J. F. Ellison, Albert Bettinger, M. B. Farrin.

Among the resolutions adopted were the following:

We affirm as the sense of this association that the improvement of the Ohio River from Pittsburgh to Cairo should be such as to provide a 9-ft. stage at low water; for the completion of which we respectfully ask that all appropriations necessary be made at the earliest practicable time.

We note with much satisfaction the constant growth of sentiment throughout the country for the improvement of our waterways, brought about in great part through the efforts of the National Rivers and Harbors Congress; wherefore it is resolved that we continue our support to the said National Rivers and Harbors Congress in its efforts to establish permanently the policy of annual appropriations of not less than \$50,000,000 for river and harbor improvements.

We herewith renew our protest against the maintenance of narrow channel spans across the Ohio River, and commend the action of the War Department in enforcing the laws of Congress for the removal of such obstructions. We heartily indorse the plan proposed by the United States Engineers' Department for a bridge at Steubenville to replace the one now maintained by

the Pittsburgh, Cincinnati, Chicago & St. Louis Railway Company, so dangerous to navigation.

This association recommends the maintenance by the Government of an adequate force of engineers to be available for the prosecution of river and harbor improvements, to which end is suggested the appointment or employment of civil engineers from private life when necessary.

We commend the State of Ohio for its action in preserving its canal system. We urge that State not to abandon any of its canal property, but on the contrary to convert its present canals connecting Lake Erie with the Ohio River into barge canals, to the accomplishment of which we pledge our hearty support.

Louisville, Ky., was selected as the place of next meeting. At the Thursday night session a special feature was an illustrated lecture by J. Frank Tilley of Pittsburgh on Ohio River locks and dams. Friday afternoon was devoted to a trip to locks and dams Nos. 11 and 13, via trolley and steamboat. Here an excellent opportunity was enjoyed of witnessing the actual operation of a movable dam of the Chanoine wicket type. An address by M. O. Leighton, hydrographer, U. S. Inland Waterway Commission, was listened to with close attention, as he defined the status of the commission.

A Factory Heating and Ventilating Equipment.

An interesting equipment of heating and ventilating apparatus has been installed at the Geo. N. Pierce Company's new plant, in Buffalo, N. Y., by the Buffalo Forge Company. The plant is a large modern automobile factory, covering about 15 acres, and built entirely of reinforced concrete. The buildings include the administration building, manufacturing building, body building, garage, brazing building, power house, motor testing building and several smaller structures. The heating and ventilating are accomplished by separate heating plants in each of the five larger buildings. Each outfit consists of an engine driven fan drawing the air from outside through heater coils which are supplied with either live or exhaust steam. From the fan the air is led through ducts underneath the buildings and up through risers in the various rooms. The ducts are concrete and in some cases measure as much as 6 x 7 ft. in cross section.

In the manufacturing building, which is 155 x 400 ft. and 20 ft. high and has total cubic contents of about 1,350,000 cu. ft., there was installed a fan with a blast wheel 113 in. in diameter by 54½ in. wide, contained in a three-quarters steel plate housing, driven by a direct connected 10 x 10 in. horizontal side crank engine, at a speed of 175 rev. per min. This fan has a guaranteed capacity of 61,000 cu. ft. per minute. The heater alone contains nearly 2 miles of 1-in. pipe.

The stock building, measuring 400 ft. long and 35 ft. wide, with an average height of about 20 ft., contains about 280,000 cu. ft. The requirements here are not so great and a smaller blast wheel, measuring 64 in. in diameter by 30 in. wide, driven by a direct connected 5 x 5 in. vertical engine of a speed of 290 rev. per min., giving the fan a capacity of 17,000 cu. ft. of air per minute, was sufficient.

The assembly building is one of the largest, being 120 x 400 ft., with an average height of 40 ft., and contains about 1,920,000 cu. ft. This is heated and ventilated by a fan of the full housing type, with a 10-ft. blast wheel, driven by a direct connected 10 x 10 in. engine at a speed of 164 rev. per min. It has a capacity of 68,000 cu. ft. of air per minute. In the heater coils in this building were used 9912 linear feet of 1-in. pipe. The apparatus in the other buildings is on a similar scale, and in each case the equipment is designed according to the individual needs.

All of the fans are constructed of heavy steel plate, with forged steel shafts turned to size. The engines are specially designed for fan driving and are the standard Buffalo Forge fan engines. The heaters are of the sectional base pattern, with steel pipes, screwed into cast iron bases and connected so as to be controlled separately, and to be supplied with live steam when sufficient exhaust is not available, and tested to 180 lb. water pressure before leaving the factory. The above apparatus is guaranteed to heat these buildings to 70 degrees F. when the outside temperature is 10 degrees below zero.

NEWS OF THE WORKS.

Iron and Steel.

In connection with the closing down of Franklin Furnace, Franklin Springs, Oneida County, N. Y., within the next few days, it is expected that operations at the iron mines at Clinton, from which the ore supply is secured, will also be discontinued. Some repair work will be carried on at the mine and the furnace during the shutdown.

Rome Furnace Company expects to blow out its blast furnace at Rome, Ga., November 25.

The No. 1 furnace of the Thomas Iron Company at Hocken-dauqua, Pa., which went out of blast on October 31, was put out primarily for repairs. The furnace is now being equipped with automatic filling top, skip hoists and steel ore bins, using the Brown Hoisting Machinery Company's patents. The work is well along, and when No. 1 furnace has been thus equipped the No. 3 stack will be put out for the installation of similar improvements. At Hellertown, Pa., the company has two furnaces, the smaller of which goes out of blast this week.

One of the new Bessemer converters of the Tennessee Coal, Iron & Railroad Company, used in connection with the duplex process at its Ensley, Ala., works, started off very satisfactorily. The company made the first heat from the second of its large new open hearth furnaces last week. The indications are that it will be possible to take off not less than three 80-ton heats daily. In connection with the new plant every detail of the equipment worked smoothly except a small hydraulic cylinder used for tilting the iron ladles at the converter. In view of the size of the new plant and the innovations introduced its successful operation at the start is noteworthy.

The No. 2 blast furnace of the Buffalo & Susquehanna Iron Company, Buffalo, N. Y., was blown out last week for relining. Temporary repairs to the lining were made last spring, but they sufficed to the present time only. The furnace will probably be out for six weeks.

General Machinery.

The Central Machine & Metal Company, Moline, Ill., manufacturer special and general engines and machinery, dies, tools and stampings, has been incorporated with a capital of \$10,000. The incorporators are W. W. Turner, M. L. Hunker and W. J. Snell.

M. A. Farnsworth has been established at 16-18 Natoma street, San Francisco, Cal., for the last six months, conducting a well equipped machine shop and winding room capable of handling work of any capacity. The services of Charles A. Bendele have been secured as machine shop foreman, and J. M. De Villiers as electrical engineer. Mr. Farnsworth has recently added a large and complete stock of steam, mining and electric power apparatus and has issued a list of slightly used electrical machinery, covering a number of motors, generators, engines, pumps, &c.

The Vulcan Iron & Steel Works has been incorporated at Milwaukee, Wis., with a capital stock of \$35,000. Those interested in the new company are Christopher Stein, John E. Reilly and Angus J. Koelger.

The F. G. Gaunt Mfg. Company has been incorporated at Ft. Wayne, Ind., with \$25,000 capital stock, to manufacture machinery and engines. The directors are Forest G. Gauntt, James D. Lewis and Phillip F. Dixon.

The Pittsburgh office of the Lidgerwood Mfg. Company is installing a 200-hp. electric hoist at the Glen Osborne mines of the Unity-Connellsville Coal & Coke Company; 17-hp. electric hoist at Dawson, Pa., for the W. H. Cochran Coal Company; six 40-hp. hoists at No. 4 mine of the Vesta Coal Company, 1500-hp. automatic electric haulage system at the new mines in West Virginia of the Tidewater Railway Company, and a 1000-hp. automatic electric haulage system for the Cornwall Ore Banks Company at its new mines at Cornwall, Lebanon County, Pa.

Power Plant Equipment.

The Town Council of Chinook, Mont., will receive bids until December 21 for the construction of an electric light plant, including buildings, machinery, &c.

The Cairo Electric & Traction Company, Cairo, Ill., is to make improvements to its plant and will let contracts for two 500-kw. turbine generators, one 300-kw. motor generating set and one 200-kw. motor generating set. O. C. Macy is manager.

The Waycross Electric Light & Power Company, Waycross, Ga., of which J. E. Wadley is president and manager, is planning to install additional machinery.

When John Wanamaker built his new store in New York the Pittsburgh Gage & Supply Company, Pittsburgh, Pa., equipped his power plant with a White Star continuous oiling system. This installation having proved its usefulness, Mr. Wanamaker has just ordered a duplicate system for his Philadelphia store. It is also furnishing the Lackawanna Steel Company's plant at Buffalo, N. Y., with its third system. The company has just moved into its new seven-story factory, where with unlimited facilities it will be better able than ever to fill orders promptly. It is said that its new plant is the largest

and most complete one of its kind between New York and St. Louis.

The Calumet Gas Company, Calumet, Mich., has increased its capital stock from \$100,000 to \$150,000. The additional capital thus furnished will be applied in part to plant improvements, which include the extension of service to light the village of Lansing.

E. J. Deckman, Frick Building, Pittsburgh, Pa., has received an order from the Youngstown Sheet & Tube Company, Youngstown, Ohio, for a 2000-hp. Hoppers open type exhaust steam feed water purifier.

Foundries.

The Gerlinger Steel Casting Company, Milwaukee, Wis., has improved its plant by the addition of an engine house, 40 x 40 ft., in which a new boiler of 100 hp. has been installed. A steel spine cutter, emery grinder and two new tumbling barrows have been added to the machinery equipment.

The Wales Foundry & Mfg. Company, New Brunswick, N. J., which was organized in the spring to build a plant, has abandoned its plans because of the stringency of the money market, and it is stated that stock subscriptions will be returned.

The Nortmann-Duffke Foundry Company, Milwaukee, Wis., maker of pressed and stamped steel work and crucible and gray iron castings, is on account of slackness occasioned by the present recession in business, engaged in making needed repairs in plant buildings and machinery. Some men have been laid off temporarily, but it is stated that several large orders for pressed steel goods have been received, which will be sufficient to keep this department comfortably engaged during the greater part of the first half of next year.

Albert G. Harlin has been appointed receiver for the Indiana Foundry & Machine Company, South Bend, Ind., on petition of the Indiana & Michigan Electric Company. The foundry company claims that its assets are much in excess of its liabilities, the latter of which is placed at \$8680.

The Waterville Foundry & Machine Company, Waterville, N. Y., has about completed the rebuilding of its plant, which was recently destroyed by fire, and which it will equip as a modern machine shop and foundry. Some of the old machinery is being rebuilt and will be installed, but most of the equipment will be new. The new building is 36 x 160 ft., of stone, and is expected to be ready for operation January 1.

Bridges and Buildings.

The Pan-American Bridge Company, New Castle, Ind., has secured a bridge contract from the Wayne County Commissioners for \$14,625.

Fires.

The plant of the Michigan Crucible Steel Casting Company, Detroit, Mich., was damaged \$15,000 by fire November 13.

The plant of the Marshall Car Wheel & Foundry Company, Marshall, Texas, was damaged \$35,000 by fire November 8.

The B. F. Kimball Company's leather factory at Woburn, Mass., was partly destroyed by fire November 15. The loss is placed at \$25,000.

Hardware.

The Irvington Mfg. Company, Irvington, N. J., maker of drop forged tools, has enlarged its plant and added a number of up to date machines, which enables the company to fill the largest orders at short notice.

The Twentieth Century Wheel Company has been incorporated at Marlon, Ind., with \$20,000 capital stock, to manufacture the Gilson patented adjustable vehicle wheel. Bert D. Gilson is at the head of the company.

The Chattanooga Wheelbarrow & Mfg. Company, Chattanooga, Tenn., has passed into new hands and the name has been changed to the Chattanooga Wheelbarrow & Truck Company. The factory is being materially enlarged and improved, a power plant being installed which will permit doubling the capacity of the plant. The officers of the new company, most of whom are connected with the Chattanooga Machinery Company, are as follows: W. M. Fowler, president; Z. W. Wheland, vice-president; C. H. Huston, treasurer; P. F. Fitzgibbons, secretary, and A. D. Catlin, general manager.

Miscellaneous.

The contract for the three large skylights for the magnificent new National Museum at Washington, D. C., has been awarded to Arthur E. Rendle, of New York, Chicago and Montreal, to be glazed on his patent Paradigm skylight system. Eleven firms bid on the work. The glass roof and skylights on the new Union Depot buildings, Washington, D. C., about 80,000 sq. ft., were also glazed by Mr. Rendle on this system.

The Wheland Machine Works Company, Chattanooga, Tenn., has erected a new brick office building of two stories at White-side and Twenty-seventh streets, about one block from its plant.

The Pennsylvania Brake Beam Company, Easton, Pa., has secured about 10 acres of land located on the Delaware, Lackawanna & Western and the Philadelphia & Reading railroads, with main rolling mill and brake beam building, 220 x 470 ft., and several smaller buildings which will be used as the company's requirements may demand. James W. Trenchard is president; E. M. Applebaugh, vice-president, general manager and treasurer, and Samuel H. Hitchener, secretary.

The Amsler Engineering Company, Diamond Building, Pittsburgh, Pa., has received an order from the Canadian Gas Power & Launch Company, Ltd., Toronto, Canada, for a 100-hp. suction gas producer.

The Pittsburgh Automatic Vise & Tool Company, Pittsburgh, has completed a very large shipment of double and single swivel type vises consigned to the Brazilian Government, Rio Janeiro. The order is the outcome of a thorough inspection and test made by the Brazilian Government at the recent exhibit of the company at the Jamestown Exposition.

The Hazard, Coates & Bennet Company, Rochester, N. Y., dealer in scrap iron and steel, which recently purchased several acres of land in South Buffalo, near the Lackawanna Steel Company's plant, has purchased all the equipment it will require at present for the new plant to be erected on the property. The purchases include a 15-ton locomotive crane with magnet attachment, electrical equipment, and a couple of large alligator shears. These are to be used in connection with shears and other equipment which the company already has.

The H. H. Dry Battery Company, South Bend, Ind., manufacturer of batteries for automobiles, gas engines, launches, &c., whose plant was practically destroyed by fire August 25, is having new machinery built and expects to be in operation by the first of the year. Its capitalization will probably be increased. L. B. Hornbeck is secretary.

The Perry Stove Company, Ellettsville, Ind., has been incorporated with \$30,000 capital stock, by Harry A. Axtell, Fred I. Owens, Eugene Perry, Fred Perry and Oliver K. Harris.

The Spencer Machinery & Tool Company has been incorporated at Spencer, Ind., with \$10,000 capital stock, to manufacture and sell wrenches and other tools, trolleys and machinery. The incorporators are John M. Hawkins, William Fender and John B. Runner.

The Jupiter Packing Company has been incorporated at Anderson, Ind., with \$10,000 capital stock, to manufacture Jupiter metallic packing. The directors are D. E. Stanley, Albert Harper and Sparks L. Brooks.

Labor Notes.

The convention of the American Federation of Labor, at Norfolk, Va., this week, voted to levy a special per capita tax of 1 cent a month for a war fund. It was announced by officers of the Federation that the tax would raise \$500,000 a year. This step was taken, it was alleged, in view of the report that a manufacturers' fund of \$1,500,000 had been provided to fight organized labor. In recommending the special levy, the committee declared that the injunction suit recently brought against the Federation in Washington on account of the Buck's Stove & Range Company boycott was a menace to liberty of speech and of the press.

The bimonthly adjustment of the puddling and bar iron scales was made in Pittsburgh last week, when it was found that the average price of shipments of iron bars in September and October was 1.60 cents, compared with 1.65 cents for the previous two months. This results in a reduction in the puddling rate from \$6.62 $\frac{1}{2}$ to \$6.50 a ton, while the finishing scale is reduced 1 per cent. The average price of sheets shipped in September and October was found to be 2.47 cents, which will necessitate a reduction in price of sheet workers of 2.6 per cent. The base of the sheet scales is 2.30 cents, the men receiving an advance of 2.6 per cent. with each 1-10 cent advance above the base. There was no change in tin plate, the average price being the same as for the previous two months, so that the wages of tin plate workers for November and December will be the same as for September and October.

Charles S. Hamlin, Boston, as referee in the wage controversy between Boston boiler manufacturers and Lodge No. 9, United Brotherhood of Boilermakers and Iron Shipbuilders of North America, has awarded to the men an increase of 9 $\frac{1}{2}$ per cent., which is a compromise. The original demand was for 15 per cent. This was refused, the employers offering 7 $\frac{1}{2}$ per cent., which was accepted by Lodge No. 431, International Brotherhood, but rejected by Lodge No. 9, United Brotherhood. Ten per cent. was demanded, and this being refused a strike was called. After being out four weeks the matter was left to the referee. The new rate went into effect from June 3, when the men returned to work.

The Thomas Iron Company, the Empire Steel & Iron Company and other interests of the Lehigh Valley and New Jersey will put a 10 per cent. reduction of wages in effect December 1, which will not only cover the wages of blast furnace workmen but also those employed in iron ore mines. Quite a number of men have already been thrown out of work by the blowing out of blast furnaces, the foreign laborers being the first to be laid off.

The Average Demurrage Question.

BY R. L. ARDREY.

Many shippers who have been looking into the question of demurrage or car service rules are impressed with the advantages of average demurrage. This gives the shipper credit for cars that are released in less than the free time, to apply in liquidation of demurrage charges for cars that are held longer than the regular free time. The Ohio Railroad Commission, in rules which have been recently accepted by the railroads, has provided for average demurrage on the basis of two days' free time, wherever the shipper prefers to work under this plan, and a similar average basis has been in force in Michigan for several years. Two days is the average time allowed in Michigan on general traffic, for loading or unloading, but the basis is made three days on coal and coke, and on some commodities even longer, under special circumstances.

How Accounts Are Kept.

Under the two-day average, as established in Ohio, the shipper keeps a separate account with each railroad over which he ships or receives freight. When he releases a car in one day—that is, in a day less than the regular free time for loading or unloading—he gets credit for a day; and the railroad charges him for all cars held more than two days. The account is closed every 30 days. If there is a balance against the shipper he pays it, but if it is in his favor it is not carried forward, thus limiting the advantages of the average to 30-day periods.

In the majority of cases the shipper does not have any balance against him at the end of the month, as in most lines of business enough cars can be released in one day to cover the few cases where it is not possible to release them in two days. The records of the car service associations show that the average detention of cars by all shippers and consignees is a considerable fraction less than two days, so the advantage under this plan is in the shipper's favor.

In some of the Eastern districts the railroads have given the shipper the option of a 24-hr. average plan, instead of the regular two-day rule. This is not literally a 24-hr. average, as the time is not computed in the same manner as under the two-day average. If the shipper, under the 24-hr. rule, releases a car in 24 hr. he gets credit for one day in his account with the railroad, but if he holds it 48 hr. he is charged a day, and additional days at the same rate. To come out even, without paying a balance at the end of the month, the shipper must release at least 50 per cent. of his cars in 24 hr. If he releases more than 50 per cent. in the 24-hr. limit he obtains credit which will permit him to hold a corresponding number of cars more than 48 hr. The average free time is a day and a half, instead of two days, as allowed in Ohio and Michigan. The 24-hr. plan can only be followed to advantage by shippers whose materials or products are quickly unloaded or loaded.

A Prolific Cause of Ill Feeling.

Demurrage or car service charges seldom run into a large amount of money, but there is probably no other expense in the average industry which causes more ill feeling. One reason for this is that the shipper seldom has to pay demurrage excepting when cars have been bunched by delays in transit. For example, a manufacturer may require a certain number of cars of coal or coke per day, and his shipments are made regularly from the mine, but owing to delays in transit he may not receive any for several days, and then have a week's supply or more arrive in one day, with a bill for demurrage if the cars are not released in the regular time. The average business man cannot restrain a feeling that the railroad is at fault by giving irregular service.

In some States, like Indiana and Ohio, the railroad commissions have endeavored to define bunching and to provide for additional free time in such cases, based

upon the time the cars were shipped. This relieves the situation somewhat, but it involves a good deal of trouble and discussion with the car service manager or the agent to determine what allowance would be fair in each case. The Pittsburgh rule is a voluntary effort on the part of the railroads to solve the same problem. In the Pittsburgh car service district the large mills and other industries are rated according to their daily consumption of materials, and if their incoming cars are bunched by irregular service they are only required to unload one and a half times their daily rating.

A Simple and Automatic Solution.

The advocates of two-day average demurrage claim that it offers a simple and automatic solution of the bunching problem. Every industry can unload a considerable number of cars in one day, and if credit is given for this it will cover the cases where unloading is delayed by irregular deliveries. It avoids friction and trouble between the shipper and the railroad, because both parties have book records, and the discretionary powers of the car service manager are eliminated. Excepting where the average plan is available, the shipper is offered no inducement by the railroads to release cars in less than two days, and it is believed that the two-day average would really shorten the time that cars are held for loading or unloading, thus promoting car efficiency.

It is understood that some of the large railroads oppose average demurrage for reasons which they have not made public. While the standard code of demurrage rules, recently adopted by the American Railway Association, was under consideration, it is said that the Pennsylvania and other interests objected to any provision for the average plan. The railroads, however, would gain an important advantage by saving time and expense in switching.

Under the rigid two-day rule the shipper is entitled to have the oldest cars placed first, and this involves considerable extra labor on the part of switching crews to shift the cars around so that they can be placed in the order of arrival. Under the average plan it would be immaterial to the consignee which cars came first, and the work of switching and unloading would be simplified and hastened.

Average Demurrage Would Relieve Strain on Terminal Facilities.

It is a constant subject of complaint on the part of the operating officials of the railroads that their terminal facilities are inadequate. They have ample motive power to handle the traffic on the road, but they cannot overcome the congestion on their terminals, especially where the suburban passenger traffic is growing rapidly and interferes with access to private sidings. The advantage of average demurrage in relieving this strain on their terminal facilities has apparently not been considered by many railroad men, and it would be well for shippers who favor this plan to bring it to their attention.

The universal 48-hr. limit for loading or unloading, which the American Railway Association is seeking to establish, is likely to awaken a great deal of opposition from shipping interests, as in many States the laws or rules of State commissions allow a longer time. This opposition might be removed by allowing a two-day average, which in many cases would be more satisfactory to the shipper than a rigid rule allowing three days' free time.

In New England the general rule is four days for loading or unloading. On coal and coke the consignee has three days to unload in Michigan, Minnesota, Alabama, Arkansas, Louisiana, North Carolina, South Carolina, Texas and Virginia, and the St. Louis rules allow three days on bituminous coal. In Missouri and Kansas the free time is 72 hr. on all cars containing 60,000 lb. or more, and in Ohio on 66,000 lb. or more. In Georgia the rule is 60 hr. on coal cars of 60,000 lb. In many cases these 72-hr. rules apply to lumber and other commodities, regardless of the weight of the car. The Canadian Railway Commission allows 72 hr. on coal, coke, lime in bulk and certain grades of lumber.

The Iron and Metal Trades

There is a growing feeling among business men that the cowardice or greed of many banks has been a more potent factor in the financial situation than is generally appreciated, and that effective action must come first from that quarter. As it is, however, there is a slightly better feeling in the Iron trade, which has settled down to a practical solution of the problems facing it. One fact is being realized, reflected in the order books of the producers, and that is that both consumption and buying are continuing at a rate which appears to be somewhere between 60 and 65 per cent. of full capacity. The buying is in small lots, usually, and only the orders of those are booked whose accounts on former purchases are in a shape satisfactory to the seller. More business for actual consumption could be booked, so that there is a good deal of tonnage in abeyance, of which a considerable proportion will be entered as soon as the financial scare is over.

In the meantime production is being curtailed, although not to the extent which newspaper reports would indicate. The closing down of works is heralded far and wide, but the restarting of some of them within a few days is not recorded. The Steel Corporation is now operating 65 per cent. of its blast furnace capacity, and probably will reduce further until about 50 per cent. is reached. Other interests are similarly reducing output, but the restriction generally is not as great as rumors have it.

Wide currency has been given to the statement that the Steel Corporation had ordered the blowing out of all the blast furnaces of the Tennessee Company which make Merchant Pig Iron and that the new owners would not continue in that branch of the business. The facts are that since the United States Steel Corporation has taken possession not a single additional furnace has blown out, and that the corporation will continue to be a seller of the Tennessee Company's Coal, Coke and Merchant Pig Iron.

The Pig Iron markets have been quiet, and, while prices have been irregular and generally lower, the situation has not been clearly defined. Sales of Southern No. 2 have been made on the basis of \$16.25 to \$16.50, Birmingham, while in the Central West Foundry Iron has been offered at about \$18.50, at furnace.

Some low figures have been made on Connellsburg Coke, the natural result of the blowing out of so many furnaces.

Outside of some export sales of Steel Rails the new tonnage placed has been exceedingly small, and, pending normal financial conditions, the Rail mills are closing down.

In Structural Material there has been some new business, aggregating close to 5000 tons for the Pacific Coast, 2500 tons for the Williamsburg-Brooklyn bridge loop and 1700 tons for some pier work in this city. It is understood that about 25,000 tons of Structural work for the Gary plant is reaching the shop, this being for a part of the second unit. Construction work at Gary is proceeding steadily along the lines authorized early in the year.

There have been some good orders placed for Plates, and the tonnage of new business in Wire, Bars and in Tin Plate has been very fair. It has been less satisfactory in Sheets and Tubular Goods.

There has been some sharp forcing of Old Material upon the Eastern and Western markets on the part of some of the large railroad lines, and further round blocks are being offered. The result has been a sharp decline. It should be stated, however, that some of the railroads have withdrawn their offerings, finding bids unsatisfactory.

A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type,
Declines in Italics.**

At date, one week, one month and one year previous.

Nov. 20, Nov. 13, Oct. 23, Nov. 21,
1907. 1907. 1907. 1906.

PIG IRON. Per Gross Ton:	\$19.00	\$19.00	\$19.00	\$23.75
Foundry No. 2, Standard, Philadelphia	19.25	19.75	20.75	25.00
Foundry No. 2, Southern, Cincinnati	20.00	20.50	22.00	25.50
Foundry No. 2, Local, Chicago	20.90	20.90	22.90	22.85
Bessemer, Pittsburgh.....	18.90	19.40	20.40	22.85
Gray Forge, Pittsburgh.....	25.00	25.00	26.00	25.50

BILLETS, &c., Per Gross Ton:

Bessemer Billets, Pittsburgh...	28.00	28.00	28.00	29.50
Forging Billets, Pittsburgh.....	30.00	30.00	31.00	36.50
Open Hearth Billets, Phila....	30.00	30.00	30.00	33.00
Wire Rods, Pittsburgh.....	34.00	34.00	35.00	37.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00

OLD MATERIAL, Per Gross Ton:

Steel Rails, Melting, Chicago...	14.50	15.50	16.00	20.50
Steel Rails, Melting, Phila.....	12.75	13.50	15.25	19.50
Iron Rails, Chicago.....	16.00	19.00	20.00	28.00
Iron Rails, Philadelphia.....	19.00	19.00	20.50	26.50
Car Wheels, Chicago.....	22.50	23.00	24.50	23.00
Car Wheels, Philadelphia.....	19.00	19.00	22.75	22.50
Heavy Steel Scrap, Pittsburgh..	14.50	15.00	16.75	18.50
Heavy Steel Scrap, Chicago....	12.00	12.50	14.50	17.50
Heavy Steel Scrap, Philadelphia	12.75	13.50	15.00	19.00

FINISHED IRON AND STEEL,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia.	1.75	1.75	1.75	1.83½
Common Iron Bars, Chicago....	1.75	1.75	1.78	1.71½
Common Iron Bars, Pittsburgh.	1.70	1.70	1.70	1.80
Steel Bars, Tidewater, New York	1.76	1.76	1.81	1.74½
Steel Bars, Pittsburgh.....	1.60	1.60	1.60	1.60
Tank Plates, Tidewater, New York	1.86	1.86	1.86	1.74½
Tank Plates, Pittsburgh.....	1.70	1.70	1.70	1.60
Beams, Tidewater, New York...	1.86	1.86	1.86	1.84½
Beams, Pittsburgh.....	1.70	1.70	1.70	1.70
Angles, Tidewater, New York...	1.86	1.86	1.86	1.84½
Angles, Pittsburgh.....	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh	1.70	1.70	1.85	1.65
Skelp, Sheared Steel, Pittsburgh	1.80	1.80	1.95	1.70

SHEETS, NAILS AND WIRE,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh.....	2.50	2.50	2.50	2.50
Wire Nails, Pittsburgh.....	2.05	2.05	2.05	1.90
Cut Nails, Pittsburgh.....	2.90	2.00	2.05	1.95
Barb Wire, Galv., Pittsburgh...	2.50	2.50	2.50	2.35

METALS, Per Pound:

Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York.....	13.25	14.25	12.50	22.50
Electrolytic Copper, New York.	13.00	13.50	12.12½	22.25
Spelter, New York.....	5.05	5.15	5.50	6.45
Spelter, St. Louis.....	4.85	5.00	5.35	6.25
Lead, New York.....	4.40	4.55	4.60	6.05
Lead, St. Louis.....	4.25	4.35	4.50	5.87½
Tin, New York.....	30.70	30.75	30.70	42.70
Antimony, Hallett, New York...	9.50	10.00	11.00	25.00
Nickel, New York.....	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York...	\$4.09	\$4.09	\$4.09	\$4.09

Chicago.

FISHER BUILDING, November 20, 1907.—(By Telegraph.)

The introduction of clearing house checks as a circulating medium has been accomplished locally with but little inconvenience or misunderstanding. Some payrolls were met with this medium at the end of the week, and no friction of consequence has so far developed. This and other measures designed to relieve the acute money stringency have already been productive of a more hopeful sentiment, which alone adds strength to the situation. Business, it is true, is extremely quiet and mill and factory outputs have generally been more or less curtailed. Most plants, however, are running, there having been very few indefinite shutdowns for lack of orders. Reports to the effect that the Illinois Steel Company contemplated the immediate shutdown of all or a considerable portion of the South Chicago Works are authoritatively denied. The mills of this plant are all in operation, with work enough in hand to provide for continuance in most departments for some weeks at least. Although it was generally believed that the East Chicago, Ind., and Moline, Ill., mills of the Republic Iron & Steel Company, which have been closed for a week or more, would indefinitely delay resumption, both have been started up again. Building operations are waiting, and very few contracts for Structural Material are being placed. New business in Plates, Sheets, Bars and Tubular goods is of small volume, and concerns only immediate requirements. There is practically no market for Pig Iron and only nominal prices can be quoted. Coke is equally quiet, sales being closely restricted to odd car lots for urgent needs. On top

of an extremely slack demand for Scrap, a large amount of railroad offerings has been coming out and prices have accordingly suffered. Values have declined on an average of \$2 to \$3 a ton within the past two weeks.

Pig Iron.—The market remains inactive, there being practically no demand beyond occasional carload orders for immediate consumption. While Southern quotations are nominally on a basis of \$16, Birmingham, for No. 2 Foundry, there is no fixed level of values established. One Southern furnace interest is openly quoting No. 2 Foundry at \$16.25, Birmingham, for all deliveries, and a sale of a small lot at \$15.75 is reported. On the other hand, some holders still maintain nominal quotations, at \$17, Birmingham. But the amount of tonnage in the market is too small and transactions are too meager to furnish a line on what prices would be named for good sized requirements. Sellers realize that it would be not only unwise, but wholly useless, to attempt to force the market under present conditions. Most of the Northern merchant stacks in the lake district are still in blast, but unless trade improves within a short time several important producers will be blown out. It is thought, however, that easier money conditions, which it is believed will soon be realized in an appreciable degree, will result in a better feeling and some improvement of demand. Just now, however, collections are of more consequence than orders. The following prices are for November and December delivery, f.o.b. Chicago:

Lake Superior Charcoal.....	\$25.00 to \$25.50
Northern Coke Foundry, No. 1.....	20.50 to 21.00
Northern Coke Foundry, No. 2.....	20.00 to 20.50
Northern Coke Foundry, No. 3.....	19.50 to 20.00
Northern Scotch, No. 1.....	21.50 to 22.00
Ohio Strong Softeners, No. 1.....	21.50 to 22.00
Ohio Strong Softeners, No. 2.....	21.00 to 21.50
Southern Coke, No. 1.....	20.85 to 21.35
Southern Coke, No. 2.....	20.35 to 20.85
Southern Coke, No. 3.....	19.85 to 20.35
Southern Coke, No. 4.....	19.35 to 19.85
Southern Coke, No. 1 Soft.....	20.85 to 21.35
Southern Coke, No. 2 Soft.....	20.35 to 20.85
Southern Gray Forge.....	18.35 to 18.85
Southern Mottled.....	17.35 to 17.85
Malleable Bessemer.....	20.00 to 20.50
Standard Bessemer.....	22.40 to 22.90
Jackson Co. and Kentucky Silvery, 6 %	30.40 to 30.90
Jackson Co. and Kentucky Silvery, 8 %	32.40 to 32.90
Jackson Co. and Kentucky Silvery, 10 %	34.40 to 34.90

(By Mail.)

Billets and Rods.—Very few sales are reported, and those that have been made include such small tonnages as are required for immediate use. Prices, which have for some time been more or less irregular, have firmed up. Forging Billets are now held at \$34, Chicago, from which price there is little if any deviation. The softer tendency in values generally has perhaps affected Wire Rods to some extent, and it is likely that desirable orders might be placed at a shade below current quotations, which are nominally \$34 to \$35, Pittsburgh.

Rails and Track Supplies.—A few small lots of Standard Section Rails, ranging from 1 to 500 tons, have been placed. These orders were all for immediate delivery and evidently represent emergency requirements. No inquiry indicating an awakening of interest among the railroads for 1908 delivery has developed. Until the financial situation has improved the railroads are not expected to change their waiting policy. Orders for Light Rails and Spikes are also light, and prices are subject to more or less shading. We quote as follows: Angle Bars, accompanying Rail orders, 1907 delivery, 1.65c.; car lots, 1.75c. to 1.85c.; Spikes, 2c. to 2.10c., according to delivery; Track Bolts, 2.50c. to 2.60c., base, Square Nuts, and 2.65c. to 2.75c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb. sections, \$32; 20-lb., \$33; 16-lb., \$34; 12-lb., \$35, f.o.b. mill. Standard Sections, \$28, f.o.b. mill, full freight to destination.

Structural Material.—The local shops of the American Bridge Company are running full and postponements and cancellations of contract material have thus far been comparatively few. While few contracts of large tonnage are being closed, there are on the whole quite a number of small jobs going through. A contract for 2500 tons for the White House, San Francisco, has been let to Milliken Brothers, Ltd., New York. Construction work at Gary, Ind., is still proceeding, and a small lot of material was placed for the construction of blowing engine houses. Inquiries are also in for 600 tons for the construction of railroad bridges. The mills are well up with rolling schedules and are able to make deliveries with greater promptness than for some time. A fair amount of specifications in contract orders continues to come through. Prices from store are quoted without change at 2.05c. to 2.10c., and mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.88c.; Angles, 3 to 6 in., 1/4-in. and heavier, 1.88c.; larger than 6 in. on one or both legs, 1.98c.; Beams, larger than 15 in., 1.98c.; Zees, 3 in. and over, 1.88c.; Tees, 3 in. and over, 1.93c., in addition to the usual extras.

Plates.—Business is pretty generally restricted to small tonnages for present needs. Mills are now able to make prompt deliveries on either Sheared or Universal Plates.

Notwithstanding the meager tonnage of new business being offered, prices are quite well maintained, it being the general disposition of producers to await developments rather than to offer extreme concessions in an effort to induce buying. While some postponements of shipments on contract are being asked, specifications are still coming in in moderate volume. We quote for future delivery as follows: Tank Plates, 1/4-in. and heavier, wider than 6 1/4 and up to 100 in. wide, inclusive, car lots, Chicago, 1.88c. to 2.08c.; 3-16 in., 1.98c. to 2.18c.; Nos. 7 and 8 gauge, 2.03c. to 2.23c.; No. 9, 2.13c. to 2.33c.; Flange quality, in widths up to 100 in., 1.98c. to 2.08c., base, for 1/4-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.98c. to 2.18c.; Flange quality, 2.08c. Store prices on Plates are as follows: Tank Plates, 1/4-in. and heavier, up to 72 in. wide, 2.20c. to 2.30c.; from 72 to 96 in. wide, 2.30c. to 2.40c.; 3-16 in. up to 60 in. wide, 2.30c. to 2.40c.; 72 in. wide, 2.50c. to 2.65c.; No. 8, up to 60 in. wide, 2.35c. to 2.45c.; Flange and Head quality, 0.25c. extra.

Sheets.—Influenced by the same conditions elsewhere prevalent, no great amount of new business is being booked. Such orders as are placed are for material required for immediate or nearby needs, contracts for forward delivery being almost wholly neglected. Jobbers' stocks are only fair, and with the reduced output due to closures of a number of mills, it is not likely there will be any accumulation. Prices are fairly firm, with occasional shadings of \$2 a ton, principally on Black Sheets of the lighter gauges. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 2.03c.; No. 12, 2.08c.; No. 14, 2.13c.; No. 16, 2.23c.; Box Annealed, Nos. 17 to 21, 2.53c.; Nos. 22 to 24, 2.58c.; Nos. 25 to 26, 2.63c.; No. 27, 2.68c.; No. 28, 2.78c.; No. 29, 2.88c.; No. 30, 2.98c.; Galvanized Sheets, Nos. 10 to 14, 2.83c.; Nos. 15 and 16, 3.03c.; Nos. 17 to 21, 3.18c.; Nos. 22 to 24, 3.33c.; Nos. 25 and 26, 3.53c.; No. 27, 3.73c.; No. 28, 3.93c.; No. 30, 4.43c. Sheets from store: Blue Annealed, No. 10, 2.30c.; No. 12, 2.35c.; No. 14, 2.40c.; No. 16, 2.50c.; Box Annealed, Nos. 18 to 21, 2.70c.; Nos. 22 to 24, 2.75c.; No. 26, 2.80c.; No. 27, 2.85c.; No. 28, 2.95c.; No. 30, 3.35c.; Galvanized from store: Nos. 10 to 16, 3.20c.; Nos. 18 to 20, 3.35c.; Nos. 22 to 24, 3.50c.; No. 26, 3.70c.; No. 27, 3.90c.; No. 28, 4.10c.; No. 30, 4.60c. to 4.65c.

Bars.—Specifications on contracts continue to furnish the principal tonnage coming to mills, the volume of new business being light. The Moline, Ill., and East Chicago, Ind., mills of the Republic Iron & Steel Company, which have been closed for a week or ten days, resumed operations on Monday of this week with a fair amount of specifications on hand. The East Chicago mill of the Interstate Iron & Steel Company is running the greater part of each week. Prices on Iron, as well as Steel Bars, we are advised, are now firm at quoted prices. Quotations, Chicago, are as follows: Steel Bars, 1.78c., with half extras; Iron Bars, 1.75c.; Hoops, 2.18c., extras as per Hoop card; Bands, 1.78c., as per Bar card, half extras; Soft Steel Angles and Shapes, 1.88c., half extras. Store prices are as follows: Bar Iron, 2.10c. to 2.25c.; Steel Bars, 2c. to 2.10c.; Steel Bands, 2c., as per Bar card, half extras; Soft Steel Hoops, 2.35c. to 2.45c., full extras.

Merchant Pipe.—Jobbers report a good local demand for Pipe, but the demand from outside points is quieter. This appears to be an immediate effect of the unsettled financial conditions. The mills are getting some new business, but it is naturally restricted to current requirements and includes no lots of important tonnage for forward delivery. The following mill discounts are quoted: Black Pipe, 3/4 to 6 in., 71.2; 7 to 12 in., 68.2; Galvanized, 3/4 to 6 in., 61.2. These discounts are subject to 1 point on the base. Store prices are easier and Chicago jobbers quote for small lots 71 per cent. on Black Steel Pipe, 3/4 to 6 in. About 4 points advance above these prices is asked for Iron Pipe.

Boiler Tubes.—Although both mill and store business is quiet, prices, it is stated, are firmly held. Warehouse stocks of Merchant Tubes are only normal and are being drawn upon in a moderate way for emergency demands of Boiler makers. What business there is moving is in small lots, to supply present requirements. Mill quotations for future delivery on the base sizes are as follows: 2 1/2 to 5 in., in carload lots, Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2 1/2 in. and smaller, and lengths over 18 ft., and 2 1/2 in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1 1/2 in.	.35	.35	.35
1 1/2 to 2 1/4 in.	.50	.35	.35
2 1/2 in.	.52 1/2	.35	.35
2 1/2 to 5 in.	.60	.47 1/2	.47 1/2
6 in. and larger	.50	.35	.

Merchant Steel.—The business now coming to the mills is composed principally of specifications on contracts. These are furnished in fairly good volume, though there is not much urgency for shipments. Prices are reported to be undisturbed and steady. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.98c.; Iron Finish up to 1 1/2 x 1 1/2 in., 1.93c.; Iron Finish, 1 1/2 x 1 1/2 in. and larger,

1.78c., base; Channels for solid Rubber Tires, $\frac{3}{4}$ to 1 in., 2.28c., and $1\frac{1}{4}$ in. and larger, 2.18c.; Smooth Finished Machinery Steel, 2.18c.; Flat Sleigh Shoe, 1.93c.; Concave and Convex Sleigh Shoe, 2.08c.; Cutter Shoe, 2.46 $\frac{1}{2}$ c.; Toe Calk Steel, 2.33c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7 $\frac{1}{4}$ c. to 8c., and still higher prices are asked on special grades. Shafting, 54 per cent. off in car lots; 48 per cent., less than car lots, base territory delivery.

Cast Iron Pipe.—Monetary stringency bears heavily upon the Cast Iron Pipe industry, as well as others. Due mainly to this cause, but few new orders are coming in. Municipal and other lettings comprising tonnages of considerable amount are scarce. The only one reported last week was for 300 tons for Hobart, Okla., taken by the United States Cast Iron Pipe & Foundry Company. Prices are this week revised, and we quote per net ton, Chicago, as follows: Water Pipe, 4-in., \$35; 6 to 12 in., \$34; 16-in. and up, \$33, with \$1 extra for Gas Pipe.

Coke.—The movement is extremely light, being restricted to occasional carload lots required for immediate use. There is practically no inquiry on forward delivery business. We quote 72-hr. Connellsville Coke for prompt shipment nominally at \$3 at even.

Metals.—The recent spurt in Copper has not been maintained, either in price or demand. There has been some buying during the week, but mainly in a small way, for supplies to cover work in hand. Prices are a shade easier on Lead and Tin, as well as Copper. We quote as follows: Castings Copper, 14 $\frac{1}{2}$ c.; Lake, 15 $\frac{1}{2}$ c., in car lots for prompt shipment; small lots, $\frac{1}{4}$ c. to $\frac{3}{4}$ c. higher; Pig Tin, car lots, 34c.; small lots, 34 $\frac{1}{2}$ c.; Lead, Desilverized, 4.85c. to 4.95c., for 50-ton lots; Corroding, 6c. to 6.10c., for 50-ton lots; in car lots, 2 $\frac{1}{4}$ c. per 100 lb. higher; Spelter, 5.65c.; Cookson's Antimony, 13c., and other grades, 12c. to 12 $\frac{1}{2}$ c.; Sheet Zinc is \$7.50 list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13c.; Heavy Copper, 13c.; Copper Bottoms, 12c.; Copper Clips, 12c.; Red Brass, 13c.; Yellow Brass, 10 $\frac{1}{2}$ c.; Light Brass, 6 $\frac{1}{2}$ c.; Lead Pipe, 4 $\frac{1}{2}$ c.; Zinc, 4 $\frac{1}{4}$ c.; Pewter, No. 1, 21c.; Tin Foil, 26c.; Block Tin Pipe, 28c.

Old Material.—The heavy tonnage of Railroad Scrap which was dumped on the market last week caused a still further recession in prices, with no active buyers in the market. These offerings moved slowly, and such as were disposed of were placed at a level considerably below last week's quotations. The demand from all sources is extremely light, and because of the lack of usual banking accommodations dealers buy, when at all, with great caution. Both the mills and melters are consuming less than their usual quota of material, and under present conditions are not seeking to pile up stocks, even at bargain prices. Some grades have suffered more than others, but prices on practically all are this week reduced from 50c. to \$2 a ton. The railroads will this week offer additional tonnage aggregating nearly 16,000 tons, distributed as follows: Illinois Central, 10,000 tons; Great Northern, 5630 tons; St. Louis & Southwestern, 575 tons. In the present state of the market it seems improbable that this tonnage will be absorbed without a still further sacrifice in values. At the same time, should the measures provided for the expansion of currency circulation prove adequate to the needs a buying movement might be started, which would infuse some strength into the situation. We quote per gross ton, f.o.b. Chicago, as follows:

Old Iron Rails.....	\$16.00 to \$16.50
Old Steel Rails, rerolling.....	14.25 to 14.75
Old Steel Rails, less than 3 ft.....	14.50 to 15.00
Relaying Rails, standard sections, subject to inspection.....	19.00 to 19.50
Old Car Wheels.....	22.50 to 23.00
Heavy Melting Steel Scrap.....	12.00 to 12.50
Frogs, Switches and Guards, cut apart.....	12.00 to 12.50
Mixed Steel.....	9.50 to 10.00

The following quotations are per net ton:

Iron Fish Plates.....	\$14.00 to \$14.50
Iron Car Axles.....	19.00 to 19.50
Steel Car Axles.....	17.00 to 17.50
No. 1 Railroad Wrought.....	12.00 to 12.50
No. 2 Railroad Wrought.....	11.00 to 11.50
Railway Springs.....	11.00 to 11.50
Locomotive Tires, smooth.....	17.00 to 17.50
No. 1 Dealers' Forge.....	10.00 to 10.50
Mixed Busheling.....	7.50 to 8.00
Iron Axle Turnings.....	7.50 to 8.00
Soft Steel Axle Turnings.....	7.50 to 8.00
Machine Shop Turnings.....	7.50 to 8.00
Cast Borings.....	6.00 to 6.50
Mixed Borings, &c.....	6.00 to 6.50
No. 1 Mill.....	7.50 to 8.00
No. 2 Mill.....	6.75 to 8.25
No. 1 Boilers, cut to Sheets and Rings.....	8.50 to 9.00
No. 1 Cast Scrap.....	13.75 to 14.25
Stove Plate and Light Cast Scrap.....	12.50 to 13.00
Railroad Malleable.....	11.50 to 12.00
Agricultural Malleable.....	11.00 to 11.50
Pipes and Flues.....	9.00 to 9.50

The Legislature of Louisiana proposes to prohibit foreign corporations from filing or transferring cases to the Federal courts. The State Senate has already passed such a bill, making the penalty disbarment from the State.

Pittsburgh.

PARK BUILDING, November 20, 1907.—(By Telegraph.)

Pig Iron.—The Pig Iron market continues stagnant as regards sales, and there is no tonnage moving on which to base prices. The furnaces are more concerned just now in getting ready to reduce output by either blowing out or banking than they are in trying to sell Iron, as there are few buyers. Many consumers find they have overbought and are trying to resell Iron at almost any price they can get. We continue to nominally quote Bessemer Iron at \$20, Valley furnace, but it is more than probable that this price could be shaded, perhaps as much as \$2 a ton, if a consumer would place a contract and take the Iron out at once. Basic is nominally \$18, Valley furnace, or \$18.90, Pittsburgh, but there is none selling. Northern No. 2 Foundry is offered for prompt delivery as low as \$19, Valley furnace, but on any large tonnage for shipment in the next two or three months this price could be materially shaded. Forge Iron has been offered at \$18, Valley furnace, or \$18.90, Pittsburgh, and declined.

Steel.—There is no new demand for Billets or Bars, and the market is lifeless as regards sales. The large Steel interests are working closely together in the matter of reducing output and sustaining prices, and so far have been successful in preventing demoralization. We quote Bessemer and Open Hearth Billets nominally at \$28, Pittsburgh, and Sheet and Tin Bars at \$31 for this year delivery. Prices on Sheet and Tin Bars will be lower after the first of the year.

(By Mail.)

The local situation in the Steel business is no worse than it was last week, and perhaps the feeling is a little better. Two or three local bankers have stated in the last day or two that the supply of currency is somewhat larger, and it is believed that the action of the Government in issuing bonds will have the effect of bringing out and putting into circulation a good deal of money that is now hoarded. There is not enough currency by any means to supply business demands, and the leading Steel interests and other manufacturers are still compelled to pay their men in clearing house checks, to the extent of 80 per cent., and the other 20 per cent. in cash. However, the demand for currency for pay rolls in the future will not be nearly so heavy, as a great many concerns have laid off practically every man that can be spared. In the present chaotic condition of the Steel trade, which is without precedent, and locally is much worse than in 1893 and 1903, one feature stands out prominently, and that is the wonderful stability in prices, in face of a practically stagnant market. This is in strong contrast with the conditions ruling in 1893, or before the formation of the United States Steel Corporation. In the panic of 1893 practically all the concerns making Iron and Steel tried to keep running, and went out in the market and sold their products for the best prices they could get. This policy resulted in Pig Iron, Steel and Finished Material being sold in many cases below actual cost, and the whole market was demoralized. To-day the conditions are radically different, prices showing a stability that is simply remarkable. This comes as a result of a closer understanding between the Steel Corporation and the other Steel interests by which, instead of trying to run their furnaces and mills and sell the output in a market that does not want it, the watchword has been to cut down output. The extent to which this policy has been followed by the Steel Corporation is shown by the fact that to-day the Carnegie Steel Company has 24 blast furnaces out of blast and 4 banked, the Illinois Steel Company has 9 furnaces down, the National Tube Company 5 and the American Steel & Wire Company 3, or a total of 45 idle blast furnaces owned by interests of the corporation. Out of 6 furnaces in the valleys, the Republic Iron & Steel Company has 4 idle, the Shenango Furnace Company has 2 down and 1 more will go out this week, while the Stewart Iron Company has blown out its furnace at Sharon, Pa. It is probable that more furnaces in the valleys will go out of blast in the next week or two, as all of them are pretty well caught up on their orders for Pig Iron, and have stated they will not run unless they have actual orders for Iron on which to operate. It is likely, too, that next week shipments of Ore will stop. Out of nearly 20,000 ovens in the Connellsville region, the Frick Coke Company has blown out over 6000, or nearly one-third its capacity. Independent Coke operators have reduced their output 25 per cent. or more. In every way possible the Steel interests are reducing output and will continue to do so until consumers want it. Steel plants that are still running have been slowed up and are not making more than 50 per cent. of their normal output. All this is bound to have a beneficial effect in two

ways: first, it will prevent stocks from being piled up, and second, it will keep down payrolls to a minimum, which is desirable, in the present shortage of currency. Consumers in many cases are either trying to cancel contracts or have asked that shipments be held up until conditions improve. Some of the leading Steel interests, while refusing to cancel orders, are complying with requests to suspend shipments as far as possible, and are not forcing customers to take in material they do not want, and for which they cannot pay. It is believed that the business now being held back is simply "backing up," and once this business is let loose, with money easier, consumers will find they cannot get prompt deliveries from the mills, which they will probably want. As 1908 is a presidential year, the opinion is pretty general that there will be a slowing down in production next year, but that with other conditions good there will be enough business going to keep the furnaces and mills moderately busy.

Ferromanganese.—There is practically no demand, and a good deal of Ferro is being offered for resale as low as \$52, Pittsburgh. No inquiries are in the market from consumers, who are covered and are not interested in placing contracts ahead until the situation has cleared.

Muck Bar.—There is an entire absence of new demand and we quote best grades of Muck Bar made from all Pig Iron at nominally \$33, Pittsburgh. If any tonnage was wanted, it is probable that a consumer could buy at a lower price.

Skelp.—No new business is being offered. The mills are pretty well caught up on contracts, and have very little work ahead of them. No attempts are being made to force customers to take material, and prices are fairly steady. We quote nominally as follows: Grooved Steel Skelp at 1.70c. to 1.75c.; Sheared Steel Skelp, 1.80c.; Grooved Iron Skelp, 1.90c., and Sheared, 2c. to 2.10c., depending on sizes and widths. These prices are f.o.b. maker's mill, and could probably be shaded if any new business was offering.

Steel Rails.—The market on Standard Sections is practically stagnant, and no contracts are likely to be given out by the railroads until money conditions are better. The Edgar Thomson mill of the Carnegie Steel Company is still running, but has been slowed down very much and is turning out only about half or less its usual output. This concern sold about 1000 tons of Light Rails in the past week. Prices on Light Rails, which are still being cut about \$2 a ton or more by the mills rerolling Rails are as follows: 25 to 45 lb., \$30; 20-lb., \$31; 16-lb., \$32; 12-lb., \$34; 10-lb., \$36, and 8-lb., \$40. We quote Standard Sections at \$28, at mill, and Angle Splice Bars at 1.65c., at mill.

Plates.—The few orders going are for small lots for actual needs. Leading consumers, such as the Steel car interests and others, are still taking out practically their usual requirements, but the demand from this source will soon slow down, as the car companies are fast catching up on their orders, and practically no new contracts for cars are being placed. Most of the Plate mills have slowed down and are restricting output. Prices on the whole are well maintained, but here and there are being slightly shaded by some mills. We quote: Tank Plates, $\frac{1}{4}$ -in. thick, $\frac{1}{4}$ -in. up to 100 in. wide, 1.70c., base, at mills, Pittsburgh. Extras over this price are as follows:

	Extra per 100 lb.
Gauges lighter than $\frac{1}{4}$ -in. to and including 3-16-in. Plates on thin edges.....	\$0.10
Gauges Nos. 7 and 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 in.....	.05
Plates over 110 to 115 in.....	.10
Plates over 115 to 120 in.....	.15
Plates over 120 to 125 in.....	.25
Plates over 125 to 130 in.....	.50
Plates over 130 in.....	1.00
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.).....	.10
Complete Circles.....	.20
Boiler and Flange Steel Plates.....	.10
"A. B. M. A." and ordinary Firebox Steel Plates..	.20
Still Bottom Steel.....	.30
Marine Steel.....	.40

TERMS.—Net cash 30 days. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes, 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

Structural Material.—A great deal of work involving heavy tonnage has been hung up on account of money conditions, and it is likely to be some time before it is taken up again. None of the leading Structural interests is booking any heavy tonnage, actual orders being small, and few of them. We quote: Beams and Channels, up to 15 in., 1.70c.; over 15 in., 1.80c.; Angles, 3 x 2 x $\frac{1}{4}$ in. thick, up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3 $\frac{1}{2}$ in., 1.80c.; Zees, 3 in. and larger, 1.70c.; Tees, 3 in. and larger, 1.75c.; Bulb Angles and Deck Beams, 2c. Under the Steel Bar card Angles, Channels and Tees under 3 in. are 1.70c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Sheets.—The output of Sheets has been materially reduced in the past two or three weeks, both by the American Sheet & Tin Plate Company and the independent mills. There is no desire on the part of the Sheet mills to try to force business by naming lower prices, and the market is being well maintained. In some cases a few mills have made slight concessions in the matter of freights, sometimes quoting f.o.b. mill instead of Pittsburgh, as is usually done. It is believed that just as soon as money conditions are better the demand for Sheets will improve, and consumers who are now holding up tonnage may have trouble later in getting deliveries. Stocks of Sheets all over the country are light, this being shown by the small orders coming in, on which quick shipment is urged. Regular prices are as follows: Blue Annealed Sheets, No. 10 gauge and heavier, 1.85c.; Nos. 11 and 12, 1.90c.; Nos. 13 and 14, 1.95c.; Nos. 15 and 16, 2.05c.; Box Annealed, Nos. 17 to 21, 2.35c.; Nos. 22 to 24, 2.40c.; Nos. 25 and 26, 2.45c.; No. 27, 2.50c.; Nos. 28, 2.60c.; No. 29, 2.75c.; No. 30, 2.85c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.65c.; Nos. 12 and 14, 2.75c.; Nos. 15 and 16, 2.85c.; Nos. 17 to 21, 3c.; Nos. 22 and 24, 3.15c.; Nos. 25 and 26, 3.35c.; No. 27, 3.55c.; No. 28, 3.75c.; No. 29, 4c., and No. 30, 4.25c. We quote No. 2 gauge Painted Roofing Sheets at \$1.85 per square, and Galvanized Roofing Sheets, No. 28 gauge, \$3.25 per square, for 2-in. corrugations. These prices are for carload lots, jobbers charging the usual advances.

Tin Plate.—A feature of the Tin Plate trade is the fact that the official price of \$3.90 per box, subject to the usual rebate of 5c. under certain conditions, is being absolutely maintained in the face of a very quiet demand. The leading Tin Plate interests have the situation well in hand and are keeping down the output to meet the actual demand, thus preventing stocks from piling up, to act as a menace on the market. The Tin Plate interests believe that next year will be a record breaker in the matter of demand, and if the present suspension in buying is maintained there may be some trouble later on in getting prompt deliveries. We quote \$3.90 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, on which price a rebate of 5c. a box is allowed for carload and larger lots.

Iron and Steel Bars.—Wages of puddlers in mills making Iron Bars for November and December have been reduced from \$6.62 $\frac{1}{2}$ to \$6.50 a ton. A number of the leading interests are taking advantage of the present lull in demand to close down mills and make needed repairs. Very little new business is being placed in either Iron or Steel Bars, and specifications against contracts for Steel Bars have shown a decided falling off. However, shipments are still fairly heavy, and prices on Steel Bars are being absolutely maintained. We quote Steel Bars at 1.60c., base, Pittsburgh, and Iron Bars at 1.70c., Pittsburgh, for delivery in the Pittsburgh District, and 1.60c., Pittsburgh, for Western shipment. However, some of the Bar Iron mills are shading these prices from \$1 to \$2 a ton.

Spelter.—There has been a marked falling off in demand and a severe decline in prices, best grades of Spelter now being offered as low as 4.90c., St. Louis, equal to 5.02 $\frac{1}{2}$ c., Pittsburgh.

Hoops and Bands.—New demand is very quiet, but we are advised prices are being strictly maintained. We quote Steel Hoops, 2c., and Bands for all purposes at 1.60c., base, half extras as per Standard Steel card. These prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of \$2 a ton being charged for less than carloads.

Spikes.—There is practically no new demand, but prices are fairly firm in the absence of buying. We quote Railroad Spikes at \$1.90, and smaller sizes at \$2 to \$2.05 per 100 lb., f.o.b. Pittsburgh.

Merchant Steel.—There is almost an entire absence of new business, and specifications against contracts are not satisfactory to the mills, a good deal of tonnage being held up. Prices are fairly strong, and we quote Cold Rolled Shafting at 54 per cent. off in large lots and 48 per cent. off in carload lots, delivered in base territory: Smooth Finished Machinery Steel, 1.85c. to 2c., depending on quality; Flat Sleigh Shoe, 1.65c. to 1.75c.; Cutter Shoe, 2.15c. to 2.20c.; Toe Calk Steel, 2.10c. to 2.15c.; Railroad Spring Steel, 1.75c. to 1.80c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades, and 10c. and upward for special grades.

Merchant Pipe.—New demand is very quiet and is mostly for small lots, on which buyers ask quick shipment, showing that stocks of Pipe all over the country are light. Jobbers are not buying ahead, desiring to keep their stocks as low as possible until the situation is clearer. We are advised that prices on Steel Pipe are being firmly maintained, the net discount on $\frac{3}{4}$ to 6 in. Steel Pipe being 74 and 5 per cent. off list. In Iron Pipe there is some shading to the extent of about 3 points, or \$6 a ton, over official discounts. Discounts on Steel Pipe are as follows:

Merchant Pipe.

	Jobbers, carloads.	Steel.	Black.	Galv.
	%	%	%	%
$\frac{1}{8}$ to $\frac{1}{4}$ in.	65	49		
$\frac{5}{8}$ in.	67	53		
$\frac{1}{2}$ in.	69	57		
$\frac{3}{4}$ to 6 in.	73	63		
7 to 12 in.	70	55		
Extra strong, plain ends:				
$\frac{1}{8}$ to $\frac{1}{4}$ in.	58	46		
$\frac{1}{2}$ to 4 in.	65	53		
$\frac{3}{4}$ to 8 in.	61	49		
Double extra strong, plain ends:				
$\frac{1}{2}$ to 8 in.	54	43		

To the large trade all above discounts are subject to 1 point on the base, and 5 per cent. on the net.

Discounts on Iron Pipe, which are shaded 3 points, are as follows, f.o.b. Pittsburgh:

Standard Genuine Iron Pipe.

	Black.	Galv.
	%	%
$\frac{3}{4}$ to 6 in.	67	57
$\frac{1}{2}$ in.	62	50
$\frac{5}{8}$ in.	60	42
$\frac{1}{4}$ and $\frac{1}{4}$ in.	58	42
7 to 12 in.	62	47

Extra Heavy Iron Pipe, Plain Ends.

$\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{4}$ in.	62	40
$\frac{1}{2}$ to 4 in.	59	47
$\frac{1}{2}$ to 8 in.	55	42

Boiler Tubes.—The demand is light and is mostly for small lots. Prices on Railroad Tubes are being shaded, but on Merchant Tubes are fairly strong, discounts on the latter being as follows:

Boiler Tubes.

	Iron.	Steel.
1 to $1\frac{1}{4}$ in.	42	47
$1\frac{1}{4}$ to $2\frac{1}{4}$ in.	42	59
$2\frac{1}{2}$ in.	47	61
$2\frac{1}{2}$ to 5 in.	52	65
6 to 13 in.	42	59
2 $\frac{1}{2}$ in. and smaller, over 18 ft. long, 10 per cent. net extra.		
2 $\frac{1}{2}$ in. and larger, over 22 ft. long, 10 per cent. net extra.		

Coke.—The extent to which the Coke output has been reduced is shown by the fact that last week the production in the Upper and Lower Connellsville regions was only 322,340 tons, a decrease over the preceding week of more than 100,000 tons. The output this week will show a still larger falling off, as most plants are running only five days a week. There is practically no demand for either Furnace or Foundry Coke, and in the absence of sales we quote Furnace Coke nominally at \$2.25 and 72-hr. Foundry at \$2.75 to \$3 a ton at oven. High Sulphur Coke is offered at still lower prices.

Iron and Steel Scrap.—None of the large consumers of Scrap is taking in a pound of material that can possibly be avoided, but, on the other hand, dealers are not trying to force sales at the expense of prices. Credits are being scanned very closely, and in some cases shipments of material have been refused where the consumer offered notes in payment. The Pennsylvania Railroad sold last week, through its purchasing agent in Philadelphia, fully 10,000 tons of Scrap of various kinds, on which prices obtained were \$2, and possibly \$3, a ton less than were obtained by this road for its Scrap sold in October. Prices on all kinds of Scrap are again lower, but there is really no market, prices depending altogether on the financial responsibility of the buyer and the necessities of the seller. Dealers quote about as follows: Heavy Steel Scrap, for Sharon, Pittsburgh or Steubenville delivery, \$14.50; Bundled Sheet Scrap, \$12.50 to \$13; No. 1 Railroad Wrought Scrap, \$15; No. 2, \$14.50; Rerolling Rails, \$15 to \$15.25; No. 1 Cast Scrap, \$16 to \$16.50; Cast Iron Borings, \$8 to \$8.50; Old Steel Rails, short pieces for Open Hearth use, \$14.50; Low Phosphorus Melting Stock, \$18.50 to \$19; Steel Axles, \$20 to \$20.50; Iron Axles, \$24 to \$24.50; No. 1 Busheling Scrap, \$14; No. 2, \$11; Old Car Wheels, \$21 to \$21.50; Standard Sheet Bar Crop Ends, \$17.50 to \$18; Grate Bars, \$14; Stove Plate, \$13, net ton. All above prices are per gross ton, f.o.b. Pittsburgh, except Stove Plate, which is usually sold by the net ton.

Cleveland.

CLEVELAND, OHIO, November 19, 1907.

Iron Ore.—The movement of Ore from the upper lake ports has fallen off heavily the past few days. Some of the largest shippers are now sending their boats down with their last cargoes and will be through with their shipments this week. Those who have some shortage on their Bessemer contracts will keep on making shipments as long as the weather permits, but the tonnage moved in the last week of November and until navigation closes in December will be light. Unloading of boats at Lake Erie docks is going on slowly for the reason that trestles at the furnaces are well filled and nearly all the Ore is being piled on the docks. Owing to the early shutdown of Ore shipments the total movement of the season will be somewhat less than it was estimated a few weeks ago, and it is now believed that, in-

cluding the all-rail shipments, it will be about 41,000,000 tons. No unsold Ore will be brought down to be stored on the docks. Prices are as follows at Lake Erie docks, per gross ton: Old Range Bessemer, \$5; Mesaba Bessemer, \$4.75; Old Range Non-Bessemer, \$4.25; Mesaba Non-Bessemer, \$4; Siliceous Bessemer, \$2.75; Siliceous Non-Bessemer, \$2.35 to \$2.60.

Pig Iron.—The situation shows no improvement. The only sales in this district during the week have been one or two very small lots for early shipment, and there are practically no inquiries. More withhold orders have come in. As a result a large amount of Iron contracted for this year will not be delivered until the first part of next year. The financial stringency is not only causing a reduction in the consumption of Iron, but in some cases furnaces are withholding shipments that are wanted until customers can pay for Iron that has already been delivered. As a result of being considerably oversold, local merchant furnaces are in fairly good shape and have not given the question of going out of blast serious consideration. One furnace operated by local interests, the C furnace of M. A. Hanna & Co., at Buffalo, went out of blast this week. No. 1 furnace of Pickands, Mather & Co., at Toledo, will be blown out about December 1, according to present plans. The furnace is running on Foundry Iron. Furnace No. 2 of the same company will continue on Malleable Iron. Josephine furnace of Corrigan, McKinney & Co., which was to have been changed to Bessemer Iron November 1, is still running on Foundry Iron. Local prices are weaker, furnaces now naming \$19.50 for No. 2 Foundry, at furnace. The sale of a small tonnage of No. 3 is reported at \$19, Cleveland furnace. Local interests report sales at Western Pennsylvania furnace during the week at \$18 and \$18.50, for No. 2 Foundry. There was an inquiry for 300 tons of No. 1 Foundry for the navy yard at Washington, but the order was placed outside this district at \$20.75, delivered. Quotations for the balance of the year, f.o.b. Cleevland, are as follows:

Bessemer	.....	\$20.90
Northern Foundry, No. 1	.....	20.00
Northern Foundry, No. 2	.....	19.50
Northern Foundry, No. 3	.....	19.00
Southern Foundry, No. 2	.....	\$20.85 to 21.35
Gray Forge	.....	19.40

Coke.—The market is stagnant and prices are weaker. Owing to the closing down of blast furnaces and limited operation of foundries, the demand for both grades on contract is very limited. Foundries are looking for lower prices, and are using up their surplus stocks. We quote Connellsville Furnace Coke for spot shipment at \$2.35, at oven, and 72-hr. Foundry Coke at \$3 to \$3.15, at oven.

Finished Iron and Steel.—There is a feeling of more confidence among local manufacturing and business interests, which is reflected in the Iron and Steel trade. Bankers feel that the worst of the financial stringency is over. Further than a relief in the situation due to the gradual return of confidence, it is too early yet to notice more than a slight improvement in business conditions. This improvement, however, is expected to grow as soon as the situation eases up enough to permit the more liberal withdrawal of funds from banks to enable plants that are now partially shut down, because of the tightness of the money market, to resume fuller operations. While there is very little new business, and that only in small lots for immediate needs, one or two mills report a slight improvement in specifications during the past week. Mills are not making much effort to get new business until the situation becomes clearer. The closing down of the Lorain yard of the American Shipbuilding Company and the partial closing of the other yards of that company have cut off, to a large extent, the specifications for Plates and Shapes for new boats. With plenty of work on hand the shipyards will resume at full capacity, however, as soon as the financial situation is sufficiently relieved. There is very little price cutting, but customers who come into the market for material at the present time look for price concessions and make inquiries at different mills before placing orders. The Bar Iron situation shows no improvement, and prices are weak with some cutting reported. The mill of the Empire Rolling Mill Company, Cleveland, shut down temporarily this week, so that it can get a few orders ahead. One local Steel mill has also shut down temporarily. Local mills quote Iron Bars at 1.60c., Cleveland, but a lower price can, doubtless, be secured for a good order. Other mills are asking 1.60c., Pittsburgh. We quote Steel Bars at 1.70c., Cleveland, for car lots, with half extras. Structural work is being held up by the scarcity of money, although one local structural shop placed an order for several hundred tons. We quote Beams and Channels at 1.80c., base, Cleveland. There is an occasional inquiry for Plates for immediate needs. We quote $\frac{1}{4}$ -in. and heavier, carload lots, 1.80c., base, Cleveland. There is practically no demand for Sheets, and some cancellations of orders are reported. Prices on Black Sheets are being shaded about \$2 a ton. There is some demand for Light Rails in carloads and less for coal mines. A few sales of Forging Billets in small lots are reported at \$30 and \$31, Pittsburgh. Warehouse business is light, with no change in prices. We quote

Steel Bars out of stock at 1.90c. to 1.95c., and Iron Bars at 1.95c. to 2c. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.30c.; No. 28 One Pass Cold Rolled, 3.05c.; No. 28 Galvanized, 4.05c. Beams and Channels out of stock are 2.10c. to 2.15c., base. Warehouse prices on Boiler Tubes, 2 $\frac{1}{4}$ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 67 per cent. discount.

Old Material.—Only a small tonnage has been taken to supply immediate needs. There have not been enough sales to form a satisfactory basis for market quotations, and they are largely nominal. Mills can buy what they want at about their own figure. In a number of cases holders have been unable to get any offer whatever for Scrap that they were anxious to move. The shutdown of two of the local mills has further weakened the market. Some railroads are said to be holding their Old Material, waiting for more favorable market conditions. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails.....	\$14.50 to \$15.00
Old Iron Rails.....	20.00 to 20.50
Steel Car Axles.....	19.00 to 20.00
Old Car Wheels.....	19.00 to 20.00
Relying Rails, 50 lb. and over.....	27.50 to 28.00
Relying Rails under 50 lb.....	30.00 to 31.00
Heavy Melting Steel.....	14.00 to 14.50
Railroad Malleable.....	15.00 to 16.00
Agricultural Malleable.....	14.00 to 14.50
Light Bundled Sheet Scrap.....	10.00 to 11.00

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles.....	\$22.00 to \$22.50
Cast Borings.....	7.50 to 8.00
Iron and Steel Turnings and Drillings.....	9.00 to 10.00
Steel Axe Turnings.....	11.50 to 12.00
No. 1 Busheling.....	12.00 to 12.50
No. 1 Railroad Wrought.....	13.50 to 14.00
No. 1 Cast.....	14.00 to 14.50
Stove Plate.....	12.50 to 13.00
Bundled Tin Scrap.....	10.00

San Francisco.

SAN FRANCISCO, CAL., November 13, 1907.

The local representatives of the principal Iron and Steel manufacturers of the East are pursuing a conservative policy in view of the financial stringency. They are not actively seeking new business, and are carefully watching credits. Naturally, collections continue to be slow, but business failures and bankruptcies have been very few during the past two weeks of financial stress. Local wholesalers realize the necessity for forbearance, and avoid precipitating failures by pressing claims for immediate settlement of accounts. While two of the smaller banks, not national banks, are temporarily suspended, it is understood that all of the 18 clearing house banks are perfectly solvent, and will have no difficulty in carrying on business on a full cash basis as soon as they receive the large amounts of gold due them from the Eastern banks, which have been unwilling to part with their gold for some time. The legal holidays, which have been declared by Governor Gillette from day to day since October 30, will be continued until the proposed special session of the Legislature, which is to be called for November 20, provides some relief measures. However, if the New York banks release the California gold before that time, extraordinary measures may not be found necessary. It is proposed to extend the time for the payment of delinquent taxes by legislative enactment, thereby putting into circulation a lot of gold that has been held in reserve for payment of taxes. According to special orders from Washington, D. C., the coinage of \$15,000,000 gold bullion in the vaults of the San Francisco Mint was commenced a few days ago, and this will considerably increase the total of Government coin in the city. The results of the municipal election November 5 were very reassuring to the business interests. The election of Mayor Taylor to succeed himself insures the continuance of the present antigrant city administration. Many mechanics are out of work in the building trades and other lines of industry, but wages have not declined so far. Payment of wages in clearing house currency, which has come into use for ordinary business transactions during the past two weeks, has not been relished by the mechanics, but it has usually been accepted as a necessity.

Structural Steel.—Fair weather permits steady progress to be made in the erection of Architectural Steel in 20 or more new buildings in course of construction. Good deliveries of Steel are being made, as a rule, both by rail and water. A massive fireproof warehouse is being constructed for the Roebling Construction Company on the corner of Folsom and Hawthorne streets. This building is to be 112 $\frac{1}{2}$ x 150 ft. and 72 ft. high, with a tower adding an additional height of 45 ft. In but few of the structures planned since the earthquake has more attention been paid to fire protection than in this. Only reinforced concrete and Steel are to be used, and the added protection of automatic sprinklers has been provided. There is not much demand for Structural Steel under existing conditions. There is some inquiry, but the banks are advising those who have not already secured funds for building operations to go

slowly for the present in the matter of asking for money. The day after the municipal election Rudolph Spreckels announced that the directors of the First Federal Trust Company, a subcompany of the First National Bank, had decided to proceed at once with arrangements for the erection of a 12-story Steel frame building on the northwest corner of Montgomery and Post streets, which will be occupied by both of these financial institutions.

Tool Steel and Steel Castings.—The stocks of Tool Steel carried in this city by Eastern manufacturers, such as the Midvale Steel Company and the Crucible Steel Company of America, are ample for present requirements. In fact, with the dullness in many of the mining districts and the closing down of numerous Copper smelters, there is a comparatively limited demand from the interior. The local machine shops and engineering works are buying only from hand to mouth. The trade will undoubtedly grow in time as the resources of the Coast are developed, and the enterprising manufacturers are making no mistake in carrying well assorted stocks and arranging to hold the field. The demand for Steel Castings is rather quiet, as the Copper mining companies are withholding their orders, while awaiting an advance in the price of the metal and the resumption of business by Copper smelters.

Pig Iron.—Notwithstanding the reports of falling prices in the East, there has been little or no cutting in the local market on Pig Iron. Ocean freights are still very high and as most of the Pig Iron used here comes from Europe, and there has been no drop in the foreign market, the effect of lower prices in the East would be slow to manifest itself on this coast. The local foundries and Iron works are not buying much beyond their immediate necessities. A shipment of 500 tons of Middlesbrough Pig Iron has just been received by Girvin & Eyre.

Sheets.—The demand on Sheets is very light at present from the local jobber to the Eastern manufacturer. The jobbers lately got caught on orders and are filled up with stock. Local consumption is not heavy, as everybody is cautious about buying during the financial stringency. Large stocks of Galvanized Sheets are on hand, but there is a greater demand than for Black, as great deal of finishing-up work on buildings is yet to be done. A good deal of Corrugated Roofing will also be needed this winter and next spring.

Tank Plates.—The big demand, which has existed for Tank Steel for the manufacture of Tanks, for building factories, oil storage and Riveted Pipe, has fallen off. The market is now rather quiet, both here and in southern California, where there has been a large consumption in the oil regions. Los Angeles jobbers say that too many Tank Plates are being shipped for present requirements.

Tin and Terne Plate.—The jobbers are heavily stocked here considering the prevailing conditions. Local agents quote the mill prices with freight added. Jobbers are expecting a heavy demand for Terne Plates for roofing purposes after a little, as many new buildings are in course of erection, for which Tin roofs will be specified. Since the fire there has been quite a reaction in favor of Tin in some quarters. Negotiations are still going on in the East for the great quantities of Tin Plate that will be needed by the American Can Company for the requirements of its many heavy customers on the Pacific Coast. The California Fruit Canners' Association is one of the largest consumers of fruit cans in the world.

Iron and Steel Bars.—A prominent manufacturers' agent says that there has been a falling off in the demand for all finished products, as the jobbers are afraid of the future. The lack of inquiries is also partially due to the arrivals of delayed goods, which had been shipped and are now in stock, with a curtailed consumption. Another reason advanced for the indisposition of local jobbers in these products to order now is that they are expecting lower prices. There have been no cancellations yet, and the trade does not seem to be really afraid to buy. However, the trade does not have to specify before the first of the year and could cancel then, if so disposed.

Birmingham.

BIRMINGHAM, ALA., November 18, 1907.

Pig Iron.—Transactions recorded during the past week are quite similar to those of the week preceding, and it cannot be said there has been a material change in market conditions. Sales of small lots have been made at figures lower than former quotations, but the aggregate tonnage sold is considerably under that of last week. One lot of 500 tons No. 2 Soft, for prompt delivery, has been placed with one of the smaller interests at \$17 per ton, f.o.b. furnace. This sale was made in the early part of the week, however, and it is believed that the same tonnage could now be had at lower figures. In most cases the demand for low grades has been met with resale Iron, and it cannot be ascertained just what differential would be made by furnaces on a firm demand, but it is generally believed that \$1 per ton on a basis of \$16.50 for No. 2 Soft would be accepted for an attractive

tonnage. Melters who have Iron to offer seem to consider each sale a market within itself and quotations are being made accordingly. Resale No. 2 Soft has been sold at \$16, and an offer of No. 4 Foundry at \$14.25 is reported. No interest is being manifested as to requirements for next year and the attitude of awaiting developments seems to be general. Leading producers are not disposed to make concessions in prices, and furnaces are being blown out as fast as order books will admit rather than allow an accumulation of stocks. Three stacks were blown out the past week, and at present there are only 14 furnaces making Foundry Iron in operation in this district. The Alice Furnace of the Tennessee Coal, Iron & Railroad Company has also been blown out, which leaves six furnaces being operated on Basic Iron.

Cast Iron Pipe.—Awarding of tonnage recently advertised by the city of Atlanta, Ga., has been deferred until a later date, and no orders of consequence have been booked the past week. No lettings are in sight for the immediate future and an attitude of awaiting adjustment of conditions prevails. Order books are being cleaned up and no doubt material curtailment of production will result. Owing to the lack of demand it cannot be ascertained just what price could be had on a large order, but it is generally conceded that former prices are being maintained, and quotations on small lots of Water Pipe are about as follows, per net ton, f.o.b. cars here: 4 to 6 in., \$34; 8 to 12 in., \$33; over 12 in., average \$30, with \$1 per ton extra for Gas Pipe. These prices are probably shaded on large municipal contracts.

Old Material.—Market conditions are practically the same as for some weeks past. Sales are being made which aggregate quite a tonnage, but there is a lack of disposition on the part of consumers to take hold for more than immediate requirements, and as a result no contracts have been made. Prices are being maintained, and no sales are reported under former quotations. Dealers' quotations are about as follows, per gross ton, f.o.b. cars here:

Old Iron Rails.....	\$22.00 to \$22.50
Old Iron Axles.....	18.50 to 19.00
Old Steel Axles.....	17.00 to 17.50
Old Car Wheels.....	20.50 to 21.00
No. 1 Railroad Wrought.....	17.50 to 18.00
No. 2 Railroad Wrought.....	13.00 to 13.50
No. 1 Country Wrought.....	14.50 to 15.00
No. 2 Country Wrought.....	12.00 to 12.50
Wrought Pipe and Flues.....	13.50 to 14.00
Railroad Malleable.....	14.00 to 14.50
No. 1 Steel.....	13.50 to 14.00
No. 1 Machinery Cast.....	14.25 to 14.75
Stove Plate and Light Cast.....	10.25 to 10.75
Cast Borings.....	7.75 to 8.25

Cincinnati.

CINCINNATI, OHIO, November 20, 1907.—(By Telegraph.)

Although there is no increased activity in the sales department of either raw or finished Iron, yet there exists that indefinable something which tells of a better feeling and which in turn usually begets business. The pronunciamento of the President and the action of the Treasury officials have had a good effect, in that the tool manufacturers and manufacturers of Iron specialties are viewing the existing activity with a commendable spirit of resignation since an early return to normal conditions is so strongly pressed. The foundries especially have been hard hit in the slump of the past few weeks, and while the local melt is off 50 to 75 per cent., report from nearby districts are more encouraging. A visiting foundryman reported the signing of a new contract for business which totaled \$60,000 the past year, but which promised \$100,000 the coming one, and that his concern had not felt any ill effects of the depression. None of the local melters have entirely suspended operations, save the Weber Foundry, which is in the hands of the courts, and with the outlined arrangements, including meetings with committees from various users of castings, the foundrymen will be very busy on the outside of their plants if not the inside. Some foundrymen, and some Iron agents as well, affect to find in the gradual reduction of ownership interests on the part of machine tool manufacturers in Iron foundries a confirmation of the contention that the tool manufacturers are too exacting in their requirements. In finished lines there appears to be as yet no serious cutting of prices, and while there is little business going, prices are being well maintained.

Pig Iron.—The principal things heard in the market this week are reports from the Pig Iron districts telling of the blowing out of furnaces and the cutting down of expenses to meet the unusual conditions of the times. A number of Cincinnati representatives of furnaces in the Birmingham District have just returned from there. On Saturday, the 16th, there were reported 27 furnaces in and 21 out of blast, these figures covering the field of makers of standard Irons. While the absence of any movement involving a respectable tonnage prevents the making of quotations with accuracy, it is safe to say that \$16, Birmingham, on Southern No. 2 Foundry can be done on immediate delivery and \$18.50 Northern No. 2 Foundry at furnace. There has been a break in Silicon Irons, and some sales are reported on Ohio Silvery 8 per cent. Silicon at \$26, at furnace. A small

tonnage of 10 per cent. Silicon is reported at \$30, at furnace. There is no more light to be shed on the 1908 situation than for a month or more back. Everything now depends on the clearing of the financial atmosphere and the resumption of work in the shops, and it is conceded that the user of castings will be very quick to respond, for he has no stocks to go on. Most of the selling agents have hit upon an equitable solution of the perplexing cancellation question. Shipments are divided up and strung out over a period of weeks or months and very few have demurred. One of the large agents in this field sent out a letter asking for his correspondents' views on the situation. Fully 95 per cent. were optimistic, and breathed a positive belief in an early recovery. A purchase of 1000 tons of Iron by one of the big Pipe companies, an incident of the week, was not of a character to affect or influence the market, for it was the nature of a trade or exchange. It came from one of the Alabama furnaces, and was an off Iron. Certain of the furnaces in the Birmingham District maintain their attitude of independence and still quoting on a basis of \$18 and \$18.50, Birmingham, for No. 2. In the Ironton District \$18.50, furnace, is the price on No. 2 Foundry, and a still lower figure is reported on about the same grade at Valley furnace. Nothing is heard of the low grades, and no figures are obtainable as to what might be done on a firm order. Local authorities agree on the prediction of lower prices for the first quarter, and estimates of \$15 on the Southern product are freely heard. For the balance of 1907, f.o.b. Cincinnati, with freight from Birmingham, \$3.25, and from the Hanging Rock District \$1.20, we quote as follows:

Southern Coke, No. 1.....	\$19.75 to \$20.25
Southern Coke, No. 2.....	19.25 to 19.75
Southern Coke, No. 3.....	18.25 to 18.75
Southern Coke, No. 4.....	17.25 to 17.75
Southern Coke, No. 1 Soft.....	19.75 to 20.25
Southern Coke, No. 2 Soft.....	19.25 to 19.75
Southern Coke, Gray Forge.....	17.00 to 17.50
Southern Coke, Mottled.....	16.50 to 17.00
Ohio Silvery, 8 per cent. Silicon.....	27.20 to 27.70
Lake Superior Coke, No. 1.....	20.20 to 20.70
Lake Superior Coke, No. 2.....	19.70 to 20.20
Lake Superior Coke, No. 3.....	19.20 to 19.70

Car Wheel Irons.

Standard Southern Wheels.....	\$29.25 to \$29.75
Lake Superior Car Wheels.....	27.70 to 28.00

Coke.—The Coke market remains quiet, with practically no change in prices. Unusually favorable weather conditions for the season have stimulated the movement, and Foundry grades seem to be fairly active considering the restricted production in other lines. Orders on these grades are being taken promptly, but an accumulation of Furnace grades is reported. The best grades of Foundry Coke are held at \$3.25 to \$3.50 and Furnace at \$2.25 to \$2.75, at oven.

Finished Iron and Steel.—Practically no change is seen in the situation. Deliveries on Sheets are now five to six weeks; Bars, immediate. Structural Shapes are in fair demand and good for from three to four weeks, and prices firm. There is really not enough volume of business to make a market, and the situation can be best described as very quiet. Dealers quote, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.80c., with half extras; small lots from store, 1.90c., base, full extras; Steel Bars, carload lots, 1.75c., base, half extras; small lots from store, 1.90c., base, full extras; Base Angles, carload lots, 1.75c.; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, $\frac{1}{4}$ -in. and heavier, carload lots, 1.95c.; small lots from store, 2.20c.; Sheets, No. 16, carload lots, 2.20c.; small lots from store, 2.50c.; No. 14, carload lots, 2.10c.; small lots from store, 2.40c.; Steel Tire, 4-in. or heavier, carload lots, 1.95c., base; Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.25c.; Sheets, No. 10, 2c., carload lots; 2.30c. from store; Sheets, No. 12, 2.05c., carload lots; 2.40c. from store; Light Sheets, Black, No. 28, carload lots, 2.75c.; Galvanized, No. 28, 3.90c.

Old Material.—There is little doing in the Scrap market, the few sales being scattered and of such varied character that it is difficult to quote intelligently. Some large dealers are apparently buying for speculation. Taking the situation as a whole, it suggests still lower levels. The following prices are given as being as accurate as are possible under the circumstances:

No. 1 Railroad Wrought, net ton.....	\$13.00 to \$14.00
Cast Borings, net ton.....	6.00 to 6.50
Steel Turnings, net ton.....	6.50 to 7.50
No. 1 Cast Scrap, net ton.....	14.00 to 14.50
Burnt Cast and Wrought, net ton.....	8.00 to 8.50
Old Iron Axles, net ton.....	19.00 to 20.00
Old Iron Rails, gross ton.....	16.50 to 17.00
Old Steel Rails, long, gross ton.....	13.50 to 14.50
Relaying Rails, 56 lb and up, gross ton.....	25.50 to 26.00
Old Car Wheels, gross ton.....	19.50 to 20.00
Mining Car Wheels, gross ton.....	10.50 to 11.50
Low Phosphorus Scrap, gross ton.....	16.00 to 16.50

An emergency hospital has been built at the Ohio Works of the Carnegie Steel Company at Youngstown, Ohio, and a staff of three surgeons is maintained to look after injured employees.

Philadelphia.

PHILADELPHIA, PA., November 19, 1907.

The Iron and Steel markets have been featureless during the past week, and the trade on the whole seems to take but little interest in the situation. Buying continues in a desultory fashion, the usual run of business being confined to small lots to meet immediate needs. The financial situation continues the leading item of interest, and while it appears as though some improvement is to be expected in the near future, it will no doubt take some time to get business back on a normal basis. The confidence of the general public must be restored before this can be done, and it will require time to get business readjusted to meet the changing conditions. No doubt is expressed as to the ultimate return of business in a fairly good volume, inasmuch as there is a lot of work which has already been figured on and which will undoubtedly go ahead as soon as the financial situation becomes more favorable.

Pig Iron.—Pig Iron sales have been very small. In some grades not enough business has been done to establish a market, while in others the tonnage has been lighter than ever. One hundred ton lots, under existing conditions, are a good sale, and some sellers have averaged not much over 100 tons a day the past week, while others have probably done less. Buying is almost at a standstill, and consumers who have heretofore been taking Iron on contract pretty freely have held up shipments, as they have about determined that it is time to reduce stocks on hand, rather than take in any more Iron. Reduced consumption is also a factor in the buying of concerns who did not contract for their full year's supply and who have been placing orders for one or two months' requirements only. Under such circumstances, the requirements for the closing months of the year have shrunken materially, and in some instances not half the tonnage that was expected to be placed will come out. While the reduction in the Pig Iron production since the first of the month has been pronounced, it will evidently not be enough to put the supply under the present rate of consumption. The withholding of deliveries will no doubt result in some accumulation of stocks on the furnace banks, which is not desired by the furnacemen, who are anxious to keep their stocks down as low as possible, and there is little doubt that production will be subjected to a further sharp reduction. Pig Iron prices generally are not very strong. In fact, in many instances, it is hard to name a price, as it is found that they vary considerably, according to conditions. In some cases we learn that rather than sell Iron at lower prices than have been ruling producers will blow out their furnaces, while in others we find Iron offered at 25c. under quotations, with no buyers. Generally speaking, it may be said that the absence of buyers is about the only thing that has prevented an established reduction in the price of some grades, as there are undoubtedly furnaces that have Iron to dispose of and are willing to make some concessions to a good buyer for a round lot. Such buyers, however, are not numerous, as the general tendency on the part of consumers is not to purchase for forward delivery until they can see with more certainty than is now possible just what future developments will be. Foundry Irons have been the most active, and quite a few sales for prompt delivery have been noted. Orders, however, have been individually small, carloads predominating, with an occasional sale of 100-ton lots. Prices for No. 2 X Foundry range from \$19 to \$19.50, delivered, although we understand that some Iron of this grade has been offered at 25c. under this price, but without resulting in business, foundries as a rule not being as much interested in the price as they are in their ability to use the Iron. Forge Iron has been dull, as the mills not being busy are not in need of heavy tonnages for immediate use. A lot of 100 tons was sold at \$16.50, delivered, but the price varies according to analysis. There has been no business done in Basic Iron. We understand that Basic for delivery in December has been offered at \$17.75, delivered, but buyers are well covered as a rule, and are not buying at the time. There has been no business done in Low Phosphorus Iron, although there have been some light sales of misfit Iron at prices varying according to analysis. Under prevailing financial conditions, as well as the general inability to size up the future, the trade is doing practically nothing regarding Iron for 1908 delivery, neither buyer nor seller being willing to commit himself at the time. While quotations are more or less nominal, prices for delivery in buyers' yards during the remainder of the year, eastern Pennsylvania and adjoining territory, range about as follows:

No. 2 X Foundry.....	\$19.00 to \$19.50
Gray Forge.....	16.50 to 17.50
Basic.....	17.75 to 18.00
Low Phosphorus.....	26.00 to 26.50

Ferromanganese.—There is practically no market for Ferro. Mills have in most cases contracted for their needs for the year, and those who have not have an accumulation due to reduced productive capacity, and are therefore not in the market. For delivery the balance of the year Ferro is offered at from \$51 to \$52, delivered in this territory, but we learn of no sales.

Steel.—Buying is at a standstill. The new business that has developed is extremely small, and specifications on old orders are light. Consumers are only taking small tonnages to fill their immediate needs, and mills in this vicinity are running on about half their capacity. Prices are nominally maintained at \$30 to \$31 for ordinary Steel and \$33 to \$35 for Forging Steel, but there would be no difficulty in getting concessions from these figures if some desirable business came out.

Plates.—A fair day-to-day demand is reported, and conditions for future business appear a little brighter. Some good tonnages have been figured on for various classes of work, but the actual placing of orders has been held up, pending a clearing of the financial atmosphere. Orders coming in are mostly small, and mills are not running at nearly their full capacity. Prices, which showed some signs of weakening last week, have stiffened up, and it is doubtful if any concession could be had from the ruling quotations, which are as follows:

	Part Carload. Cents.	Carload. Cents.
Tank, Bridge and Boat Steel.....	1.85	1.90
Flange or Boiler Steel.....	1.95	2.05
Commercial Firebox.....	2.05	2.10
Marine.....	2.25	2.30
Locomotive Firebox Steel.....	2.35	2.40
The above are base prices for $\frac{1}{4}$ -in. and heavier. The following extras apply:		
3-16-in. thick.....		\$0.10
Nos. 7 and 8, B. W. G.....		.15
No. 9, B. W. G.....		.25
Plates over 100 to 110 in.....		.05
Plates over 110 to 115 in.....		.10
Plates over 115 to 120 in.....		.15
Plates over 120 to 125 in.....		.25
Plates over 125 to 130 in.....		.50
Plates over 130 in.....		1.00

Structural Material.—There has been some falling off in the immediate demand for Structural Material. Mills, however, are still pretty fully engaged on work of a miscellaneous character, and consider the outlook for future business quite promising. There will be quite a heavy tonnage of Structural Material required for the new elevated structure and bridges in connection with the elevation of the Philadelphia & Reading Railway track on Ninth street, in this city, proposals for a part of which will be opened on December 17, while several other smaller bridge and building propositions are now before the trade. Prices are being pretty fully maintained, 1.85c. to 2c. being quoted, according to specification.

Bars.—New business is extremely light, while specifications on contracts are not plentiful. Mills, therefore, are not busy. A few inquiries for some heavy tonnages have been before the trade, but buyers want materially lower prices, which mills are not anxious to meet. Prices are nominally 1.75c. to 1.80c. for Refined Iron Bars, while Steel Bars are quoted at the same price, with deliveries materially improved.

Sheets.—There is a notable absence of new business. Buyers are placing orders for small quantities, and mills have but little forward business. In some cases work has been temporarily suspended, while in others the mills are being operated only in part on small orders. Prices, however, remain unchanged, as follows, for mill shipments, a tenth extra being quoted for small lots: Nos. 18 to 20, 2.80c.; Nos. 22 to 24, 2.90c.; Nos. 25 to 26, 3c.; No. 27, 3.10c., and No. 28, 3.20c.

Cast Iron Pipe.—The city of Philadelphia is in the market for a small tonnage of 4-in. Cast Iron Pipe for use in connection with a force main for an experimental testing station. Bids for this will be received until November 27 by George R. Stearns, director, City Hall.

Old Material.—Buying has been very meager and there has been a further recession in the prices of some grades of Scrap. Mills are not taking materials under contract, and such business as has been transacted has been in small tonnages, for prompt delivery only. Quotations are difficult to make in some grades, owing to the lack of business, and bids and offers for prompt delivery in buyers' yards are nominally quoted about as follows:

No. 1 Steel Scrap and Crops.....	\$12.75 to \$13.25
Low Phosphorus.....	17.00 to 17.50
Old Steel Axles.....	20.00 to 20.50
Old Iron Axles.....	25.00 to 26.00
Old Iron Rails.....	19.00 to 19.50
Old Car Wheels.....	19.00 to 20.00
Choice No. 1 R. R. Wrought.....	15.75 to 16.25
Machinery Cast.....	16.00 to 16.50
Wrought Iron Pipe.....	13.50 to 14.00
No. 1 Forge Fine Scrap.....	12.50 to 13.00
No. 2 Light Iron.....	8.50 to 9.00
Wrought Turnings.....	10.50 to 11.00
Stove Plate.....	13.00 to 13.50
Cast Borings.....	8.50 to 9.00
Grate Bars.....	13.50 to 14.00

The Lorain Steel Company, Johnstown, Pa., is erecting a new steel building, 485 ft. long, the contract for which has been placed with the American Bridge Company.

Metal Market.

NEW YORK, November 20, 1907.

Pig Tin.—The small supplies here and their concentration in the hands of a few holders have been responsible for the advancing prices. There is no corner, but the market price for weeks past has been established by those holdrs who were anxious to dispose of their metal promptly, and in consequence prices sagged. Now the situation is reversed, and the few holders are but slightly underbidding the largest holder, whose price has remained almost stationary for weeks. The demand, while showing an improvement over last week, is still light. A little advance figuring regarding the supplies at the end of the month will indicate that, although there will be enough metal to go around, there will be no very large surplus. Arrivals this month have been 842 tons, and there are afloat 820 tons, but of 300 tons of this, which will arrive before December 1, only 50 tons will be available for consumptive demands, as the remaining 250 tons is on Eastern steamers, which will not be unloaded before December 1. This gives our total arrivals and expected deliveries available for consumption at about 900 tons. To this amount must be added 1543 tons, the stock held in this country November 1, making in all 2443 tons available. The deliveries into consumption will be small, and probably leave a comfortable surplus. Actual price changes during the week for 5-ton lots have been as follows:

	Cents.
November 13.	30.75 to 30.80
November 14.	30.55
November 15.	30.40
November 16.	30.40
November 18.	30.30 to 30.50
November 19.	31.00
November 20.	30.70

The London market closes weak to-day at £135 5s. for spot and £136 10s. for futures.

Copper.—The Copper market continues to mark time, although we note sales of a few small lots of Electrolytic. Producers of Lake are very firm in the matter of price, many of them refusing to accept less than 14c. There is, however, good authority for the rumor that 13.12½c. was bid for a large quantity of Lake, and the seller refused to go below 13.25c. Electrolytic can be had at 13c. to 13.25c., the inside price being for export and the outside the figures at which at least two car lots were taken during the week. Casting is held at 12.87½c. to 13.12½c. There seems to be no pressure to sell, it being the belief that financial conditions will soon begin to show a slight improvement. There has been a further weakness in the London price, which market closes at £58 for spot and £57 15s. for futures. Best Selected is steady at £62 10s. The exports continue very large, amounting to 19,536 tons for the first 19 days of the month.

Antimony.—The need of some holders raising cash has been responsible for a further weakening in the price of Hallett's, which can be had at 9.50c., and possibly a shade under. While the largest importers are holding Cookson's at 11c., it can be had at 10c. Some Hungarian was sold at 8c., and the price for other outside brands ranges up to 9c.

Pig Lead.—The important news of the week comes in the form of an announcement from the American Smelting & Refining Company as follows: "In the past we have adhered to a fixed schedule for Pig Lead, which has only been changed at rare intervals, and of which the trade has been duly notified. From this time on we have decided to fix our prices according to market conditions." Following this announcement the price of Lead softened slightly, and spot can now be had in New York at 4.40c., and in St. Louis at 4.25c. The leading interest on Tuesday was meeting this competition in the matter of price. The demand from consumers is light.

Nickel.—Prices are unchanged at 45c. for ton lots and 50c. to 60c. for smaller quantities.

Selter.—A further reduction in the quotation for Selter brings the present price to the lowest of the year at 5.05c. to 5.10c., New York, and 4.85c. to 4.90c., St. Louis. Business is light.

Old Metals.—Business during the week has been light, but there has been a fair inquiry. The following dealers' selling prices cover a wide range, but this expresses the difference of opinion which sellers and buyers entertain for carload lots:

	Cents.
Copper, Heavy Cut and Crucible.	12.50 to 13.50
Copper, Heavy and Wire.	12.00 to 13.00
Copper, Light and Bottoms.	11.50 to 12.00
Brass, Heavy.	9.50 to 10.50
Brass, Light.	7.75 to 8.25
Heavy Machine Composition.	12.00 to 12.50
Clear Brass Turnings.	8.50 to 9.00
Composition Turnings.	10.00 to 11.00
Lead, Heavy.	4.12½
Lead, Tea.	3.87½
Zinc Scrap.	4.00

Ferroalloys.—There is a considerable quantity of Manganese Ore hanging over the market, which is doubtless responsible in no small measure for the further weakening of

the price of Ferromanganese, which can now be had at \$50 to \$51, Pittsburgh, or \$48 to \$49, seaboard. Ferrosilicon is also weaker, and 50 per cent. can be obtained at \$96.

Tin Plate.—New business at the mills is light, but specifications on old contracts are coming in with a fair degree of regularity. Stocks in the hands of manufacturers, jobbers and consumers are small. Prices are unchanged at \$3.90, f.o.b. Pittsburgh, and \$4.00, f.o.b. New York.

New York.

NEW YORK, November 20, 1907.

Pig Iron.—A moderate amount of business has been done, and there are some fairly large quantities under negotiation. Prices are easier. We quote nominally for Northern Iron, tidewater, \$19.50 to \$20 for No. 1 Foundry, \$18.75 to \$19 for No. 2 Foundry and \$18 to \$18.25 for No. 2 Plain. Alabama Irons are quoted nominally \$21 to \$21.25 for No. 1 Foundry and \$20 to \$20.50 for No. 2 Foundry.

Steel Rails.—One road is inquiring for Rails for January delivery, but business is practically at a standstill so far as domestic orders are concerned. A recent sale of 12,000 tons for export is reported.

Structural Material.—Business in Structural lines has not come to a standstill, despite the fact that for financial reasons a good deal of projected work has been and will be laid aside. In the past week some local contracts for Shapes have been entered by the Steel companies, while the fabricating companies have been making estimates on a number of new jobs. The receivers of Milliken Bros., Inc., reported the closing of construction contracts involving 8600 tons of Steel since November 1. One of these was for the White House, a new mercantile building in San Francisco, 2500 tons; another was for 2400 tons for Steel towers to be built for the Great Western Power Company in California. The receivers will also erect the Steelwork for a paper mill in British Columbia and for an extension to the grandstand at Sheepshead Bay. The American Bridge Company was awarded the Steelwork for the Brooklyn loop between the Williamsburg and Brooklyn bridges. On the Liberty street pier shed of the Central Railroad of New Jersey, in which about 1200 tons of Steel will be used, there was a wide range of bids—namely, from 3.35c. to 3.92c. The award has not been made. The marine department of the Maryland Steel Company will fabricate the 2000 tons of Steel for buildings required in Cuba in connection with the establishment of the town of Felton and the power and ore handling equipment for the Mayari Iron mines, to be opened up by a connected company, the Spanish-American Iron Company. In New York City a 1000-ton uptown building has come up to be figured on this week. Railroad work in a small way comes to the fabricating companies week by week, but no attention is being given to large work that is supposed to be ahead in railroad bridge building. We quote as follows on tidewater deliveries, mill shipments: Beams, Channels, Angles and Zees, 1.86c.; Tees, 1.91c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2¼c. to 2½c.

Bars.—The situation shows no improvement. Orders are few and are confined to small quantities. The Eastern Bar Iron mills are endeavoring to hold the price of Refined Iron at 1.60c., Pittsburgh, or 1.76c., tidewater, and one after another is closing down rather than take the lower prices which would be necessary to secure much new business. It is felt that slight reductions would not attract buyers and the necessary concessions would perhaps involve losses, and of the two evils the closing of mills is preferred. Steel Bars continue to be quoted at 1.60c., Pittsburgh, or 1.76c. tidewater.

Plates.—While some fair propositions involving a considerable tonnage of Plates are in prospect, the monetary conditions are interfering with the closing of orders. Transactions have therefore been light. Prices are still maintained as follows for tidewater delivery: Sheared Tank Plates, 1.86c. to 1.96c.; Flange Plates, 1.96c. to 2.06c.; Marine Plates, 2.26c. to 2.36c.; Fire Box Plates, 2.75c. to 3.50c., according to specifications.

Cast Iron Pipe.—Numerous foundries are either closing down or running on part time. New business is light, and few inquiries are being received. Carload lots of 6-in. continue to be quoted at \$31.50 to \$32 per net ton, tidewater, with a considerable concession intimated on attractive orders.

Old Material.—Nobody appears willing to purchase Scrap, except at ridiculously low figures. The market is therefore exceedingly quiet. Not much material is being pressed for sale, as holders are very generally refusing to accept such offers as are now being made. The most experienced dealers are hopelessly at sea, being unable to make any prediction regarding the future, but simply waiting until the financial situation clears. As railroad companies generally are refusing to sell at the low offers now received, and other large makers of Scrap are declining to part with it at

present prices, the accumulation in yards in this vicinity has seldom, if ever, been as light as at this time. While it is difficult to name quotations, the following range of prices is given as the closest approximation possible, per gross ton, New York City:

Old Girder and T Rails for melting....	\$10.00 to \$10.25
Heavy Melting Steel Scrap.....	10.00 to 10.25
Old Steel Rails, rerolling lengths.....	12.00 to 12.50
Relaying Rails.....	20.00 to 21.00
Old Iron Rails.....	15.00 to 15.50
Standard Haminered Car Axles.....	21.00 to 21.50
Old Steel Car Axles.....	15.50 to 16.00
No. 1 Railroad Wrought.....	12.00 to 12.50
Iron Track Scrap.....	10.50 to 11.00
No. 1 Yard Wrought, long.....	10.50 to 11.00
No. 1 Yard Wrought, short.....	10.00 to 10.50
Light Iron.....	5.00 to 6.00
Cast Borings.....	6.00 to 6.50
Wrought Turnings.....	8.00 to 8.50
Wrought Pipe.....	9.00 to 9.50
Old Car Wheels.....	18.50 to 19.00
No. 1 Heavy Cast, broken up.....	13.50 to 14.00
Stove Plate.....	12.00 to 12.50
Grate Bars.....	10.00 to 10.50
Malleable Cast.....	12.50 to 13.00

Iron and Industrial Stocks.

NEW YORK, November 20, 1907.

Fresh liquidation, which appeared to have its origin in Pittsburgh, developed in some of the iron and steel stocks on Thursday of last week. Prices were forced down to new low levels by this movement. On Friday United States Steel sinking fund 5 per cent. bonds sold down to 79. The weakness continued until Monday, when some recovery occurred as the result of the announcement that the Administration would make a large issue of bonds for the purpose of endeavoring to bring out hoarded money and assist in overcoming the scarcity of currency. Further liquidation again unsettled the market on Tuesday. The course of prices from Thursday of last week to Tuesday of this week on active iron and steel stocks was as follows: United States Steel common 22½ to 24%, preferred 79½ to 84; Car & Foundry common 24% to 27½, preferred 80 to 81½; Locomotive common 33½ to 37, preferred 90½ to 93½; Steel Foundries common 5½, preferred 25 to 26½; Colorado Fuel 15¼ to 17; Pressed Steel common 17 to 17½, preferred 67 to 68; Railway Spring common 23½ to 25; Republic common 13½ to 14½, preferred 56 to 58; Sloss-Sheffield common 36½ to 37½; Tennessee Coal 98 to 99; Cast Iron Pipe common 18½ to 19%, preferred 49 to 50%; Can common 3 to 3½, preferred 36½ to 38. Last transactions up to 1.30 p.m. today are reported at the following prices: United States Steel common 22%, preferred 80; Car & Foundry common 26, preferred 81; Locomotive common 35½, preferred 90%; Colorado Fuel 15½; Pressed Steel common 17, preferred 67½; Railway Spring common 23½; Republic common 13½, preferred 57½; Sloss-Sheffield common 32½; Tennessee Coal 99; Cast Iron Pipe common 18; Can common 3½, preferred 36%. United States Steel 5's sold down to 78½ this morning, recovering to 79.

The Lackawanna Steel Company Temporarily Shuts Down a Portion of Plant.

The Lackawanna Steel Company has temporarily closed down its No. 1, or standard rail mill, at Buffalo and reduced the force in one or two other departments so that nearly one-half its working force of 6500 men is laid off for the time being.

General Manager McCullough states that this shutdown is to permit the making of repairs, which are necessary, and for the further reason that the mills which will remain in operation, four in number, can take care of present orders requiring prompt shipment. In connection with the shutdown Mr. McCullough has made the following statement to the local press at Buffalo:

"It is a fact that the steel industry is feeling the effect of the financial stringency existing through the country, and the management has deemed it wise not to force its customers to take material at this time for which they may have difficulty in paying. There are ample orders on the books to provide the various mills with tonnage for a considerable period, but, for the reasons above mentioned, it has seemed best temporarily to curtail production, pending the return of normal financial conditions. The financial condition of the company itself is excellent, and physically it is in a position to take rank with the foremost steel producing concerns in the country as soon as the present tight money situation is relieved. The company has no paper outstanding at any banks, and has accumulated a satisfac-

tory surplus out of its earnings in the past two years to withstand any possible drain on its resources which might arise."

The Leather Belting Manufacturers' Association.

Members of the Leather Belting Manufacturers' Association held their twentieth annual convention on Tuesday afternoon and evening at the Fifth Avenue Hotel, New York, at which time, after a lengthy discussion on business conditions, the organization decided to make no change in existing prices. A paper on the "Benefits To Be Derived from Trade Association and the Duties of a Secretary-Commissioner," which was read by Henry Othmer, Chicago, Ill., who is secretary-commissioner of the Wholesale Saddlery Association, was well received. Mr. Othmer called attention to the fact that trade abuses can be better adjusted through the medium of an association, and mentioned that uniform terms as to prices and collections can be better carried out through an organization. He spoke of the fact that his organization had established a collection department, and discovered that the reports gathered by the organization's employees were of much value to the trade.

A translation of a special report on rope belting tests, which had been made in Germany, and which was issued confidentially to the trade, was read by W. Virgil Spaulding of the Grafton & Knight Mfg. Company, Worcester, Mass. The paper contained considerable confidential information of value to the trade, and is to be printed and sent to all the members.

The association elected the following officers: President, Edward P. Alexander, Alexander Bros., Philadelphia, Pa.; vice-presidents, Frank H. Croul, Detroit Oak Belting Company, Detroit, Mich.; Milton H. Cook, H. M. Cook Belting Company, San Francisco, Cal., and George B. Rowbotham, Bay State Belting Company, Boston, Mass.; secretary and treasurer, George H. Blake, New York. Executive Committee: Charles T. Page, Page Belting Company, Concord, N. H.; W. V. Spaulding, Grafton & Knight Mfg. Company, Worcester, Mass.; Frank B. Williams, I. B. Williams & Son, Dover, N. H.; George F. Hull, estate of Edward R. Ladew, New York; Robert M. Hathaway, Union Belt Company, Fall River, Mass.; F. A. M. Burrell, Charles A. Schieren & Co., New York; C. G. Neff, Bradford Belting Company, Cincinnati, Ohio.

The following firms were made members of the association: Nashville Belting Company, Nashville, Tenn.; Cole & Brown, New Haven, Conn.; Loeb Bros. Leather Belting Company, New York; Van Riper Mfg. Company, Paterson, N. J.; Charlotte Leather Belting Company, Charlotte, N. C.; Beardmore Leather Belting Company, Toronto, Canada; Kelley Staley Belting Company, Baltimore, Md.; Hartley-Rose Belting Company, Pittsburgh, Pa.; Page Belting Company, Concord, N. H.; D. K. McLaren, Montreal, Canada; W. H. Salisbury & Co., Inc., Chicago, Ill.; Stewart Belting Company, Rochester, N. Y.; S. R. Sikes Company, Minneapolis, Minn.; Couse & Bolten, Newark, N. J.; Hudson Belting Company, Worcester, Mass.; Regal Belting Company, Cincinnati, Ohio.

In the evening the association held a dinner at the hotel. There were no formal after dinner speeches and the members were entertained by theatrical talent.

President Topping of the Republic Iron & Steel Company, and Geo. G. Crawford, the newly elected president of the Tennessee Coal, Iron & Railroad Company, have been in Birmingham, Ala., the past week, arranging for the separation of the affairs of the two companies in that district. In a number of cases the same persons performed like functions for the two companies, particularly in the handling of mineral properties and in the general management. With the acquisition of the Tennessee Company by the United States Steel Corporation came the necessity of providing a distinct organization for each company in the Birmingham District.

Canadian Iron Development.

TORONTO, NOVEMBER 16, 1907.—A week ago the fires were lighted in the new furnace of the Hamilton Steel & Iron Company, and this addition to the company's plant is now in successful operation. Its capacity is 300 tons of foundry iron or 400 tons of basic iron per day. The old furnace has a daily capacity of 200 tons of foundry iron. Of this class of pig iron the company can now turn out 500 tons per day. For both foundry and basic iron the demand has been steadily increasing for some years and the company is now in a position to produce a larger quantity of whichever kind it can turn to the more profitable account. The new furnace embodies all modern improvements in the way of devices for the saving of labor in the handling of ore, pig iron, &c. For a time there was some doubt that it would be built in Hamilton, where the company's old furnace is. Port Dover was favorably regarded as a site for the plant. The later place no doubt commanded itself to the company as the port on Lake Erie most convenient to its Hamilton Works, and advantageous for the unloading of ore and coke. It was finally decided, however, that more was to be gained by the centralizing of all the works in Hamilton.

W. G. Parmalee, Deputy Minister of Trade and Commerce for the Dominion, this week inspected the plant of the Ontario Smelting Company at Welland, the company having filed its first claim for bounty.

Hugh Sutherland, executive agent of the Canadian Northern Railway Company, and president of the Attkokon Iron Company, says that the enlargement of the later company's plant by the addition of a new blast furnace will be carried out next year. Up to the present, he says, the company has not had an opportunity to test the ultimate capacity of the present plant.

A New Brunswick Project.

The Drummond Mines, Ltd., of Montreal, has leased an extensive iron area in Gloucester County, New Brunswick. The deposit is on the Nepisiquit River, 11 miles from the Intercolonial Railway and near the town of Bathurst. A railroad is to be built from the mines to that town, for the purpose of developing the property. The ground covered by the lease is 25 square miles in extent and the ore is said to be of excellent quality and of great abundance. It is further described as being easily mined. I. G. Loggie, an official of the New Brunswick Crown Lands Department, is quoted as saying that the deposit is one of the most valuable known. A royalty of 5 cents per ton on all the ore mined is to be paid to the Provincial Government.

It appears that the existence of this ore body has for some time been a secret known only to a few persons, as the location lies out of the way of general traffic. Heretofore New Brunswick has not figured as an iron country, though large tracts of it have been explored by members of the Dominion Geological Survey staff. In 1879-80, Mr. Ells examined a part of Gloucester County along the Nepisiquit River, for the survey, but his report makes no reference to evidences of iron ore there.

Concerning this property, Mr. Robinson, Premier of New Brunswick, made the following public statement in Moncton on Wednesday:

While a great deal of magnetic iron ore is already discovered, as yet very little is known of the resources of the province in this regard. Careful analysis of samples from one borehole, taking a sample at every 10 ft. for a total of 300 ft., showed an average of 51.38 per cent. of iron ore, running as high as 63.83 per cent.

The mine is situated about 25 miles from Bathurst. Mr. Drummond examined the facilities at Bathurst Point and was favorably impressed with the chances for iron works at that place. I have been informed that the company has in view not only the construction of works at Bathurst but the development of splendid water power to be found in the falls of the Nepisiquit River in connection with the industry. It has been carefully estimated by Messrs. Harmsworth that the water power of the Nepisiquit exceeds 10,000 hp.

It is worthy of note that almost contemporaneously with this mine deal in Bathurst is the publication of the fact that the Dominion Steel Company is taking an active interest in the iron deposits at Lepreux.

The St. John Sun, a newspaper supporting the Provincial Government, announces that the company will establish blast furnaces at Bathurst.

Dominion Steel Company Importing Coal.

The steamer King Haakon is engaged in a traffic very like that of hauling coals to Newcastle. It arrived in Sidney harbor on Tuesday with a cargo of 3000 tons of coal, loaded at Philadelphia for the Dominion Iron & Steel Company. This is an installment of a 26,000-ton order that was placed by the steel company. There is a very great demand for coal in Cape Breton. Though No. 4 Colliery and the MacKay Mine at Sidney are now adding their output to the coal production of the island, the supply is still far short. Vessels awaiting coal cargoes there have been delayed, and in some cases have been obliged to depart without loads. It is expected, however, that the demand will soon be overtaken.

C. A. C. J.

Trade Publications.

Pumps.—Canton-Hughes Pump Company, Canton, Ohio. Booklet. Size 3½ x 6 in.; pages, 64. This is essentially a pictorial index of the products of the company and contains no reading matter except the captions of the illustrations. The latter show steam pumps for every service, including boiler feeding, general service, fire service, handling heavy liquids, and outside packed pumps, pressure pumps, pumps for low steam pressure, automatic feed pumps, ballast pumps, vacuum and hydraulic pumps, racking pumps, tar pumps and air and air circulating pumps. Pumping engines, power blowers, blowing engines, air compressors and condensers are also illustrated.

Lifting Magnets.—Cutler-Hammer Clutch Company, Milwaukee, Wis. Pamphlet. Size 5 x 8 in.; pages 32. Contains a number of illustrations showing lifting magnets handling pig iron, steel stampings, castings, scrap and other material, together with diagrams, data on current consumption, information on lifting capacity of magnets, &c. A new cable take-up device is described and reference is made to the Cutler-Hammer system of control by which the strong inductive reaction or "kick" which occurs when the circuit is suddenly opened on a magnet coil is automatically shunted to a discharge resistance, thus protecting the magnet insulation by dissipating the energy of the induced voltage outside of the coil itself.

Drop Forging Machinery.—E. W. Bliss Company, 11 Adams street, Brooklyn, N. Y. Catalogue. Size 5 x 7¾ in.; pages 30. Devoted to machinery for drop forging shops, and illustrates and describes automatic board lift drop hammers, trimming presses, and an oil burning furnace.

Electrical Apparatus.—Holtzer-Cabot Electric Company, Brookline, Boston, Mass. Three bulletins. No. 153A, displacing No. 153, refers to testing magnetos; No. 154, displacing No. 147, to automatic electric gas lighting apparatus, and No. 204, to linemen's portable telephone testing sets.

Derails.—Hayes Track Appliance Company, Geneva, N. Y. Catalogue. Shows models A, AP, C, CX and D Hayes derails; describes their operation and illustrates operating parts and accessories.

Electric Lamps.—Westinghouse Lamp Company, 510 West Twenty-third street, New York City, successor to the Sawyer-Mann Electric Company. Catalogue. Size 5 x 7¾ in.; pages 36. Illustrates the various types of electric incandescent lamps made by this company and gives information concerning voltages and candle powers of the different sizes.

Sluice Gates.—Chapman Valve Mfg. Company, Indian Orchard, Mass., Edgar M. Moore & Co., Pittsburgh, agents. Catalogue No. 10. Gives illustrations and brief specifications of sluice gates which are designed to be operated by hand, or hydraulic or electric power, either at the gate itself or from a distant point of control.

Machine Tools.—John T. Burr & Son, 429 Kent avenue, Brooklyn, N. Y. Catalogue. This booklet contains illustrated descriptions of Burr Nos. 1 and 2 portable shaft keyseaters; No. 1 Portable bore keyseater; Nos. 1, 2 and 3 cold saws; Nos. 3, 4 and 4½, and 5 keyseat milling machines, and the No. 4 keyway broaching machine.

Gas and Gasoline Engines.—Jacobson Machine Mfg. Company, Warren, Pa. Bulletin D. Refers to the Jacobson gas and gasoline engines for stationary and portable purposes. General descriptions are given of the hit and miss and the automatic types of engines, together with line drawings and illustrations. Tables of sizes and dimensions are included.

Pumps.—Buffalo Steam Pump Company, Buffalo, N. Y. Catalogue 187. Size 8 x 9 in.; pages 132. Complete illustrated catalogue of the company's pumping machinery for every service. Divided into two sections; the first section gives standard sizes and prices of the various types of steam and power pumps, and the second is devoted to centrifugal and turbine pumps of all sizes and for all heads and purposes, giving tables, reports of tests, &c. The details of construction are described and illustrated, and useful information is appended.

Grease Traps.—Warren Webster & Co., Camden, N. J. Folder. Describes the use, construction and operation of the Webster grease and oil trap.

The Machinery Trade.

NEW YORK, November 20, 1907.

The machinery market assumed a more quiet tone the past week and the business transacted was made up almost wholly of small orders; in fact, it might be called a single tool market. This is undoubtedly due to the fact that the buying is being done principally by the smaller companies for replacement or slightly increased capacity, the larger interests apparently holding aloof from the market. As far as the railroads are concerned, they are doing very little aside from the purchase of one or two tools, and the only inquiries reported since our last report from that source were from a couple of roads in search of a single machine each. In line with the railroads are the industrial corporations, which are sending out but few inquiries. Deliveries on many of the standard makes of machine tools are now about normal, and some dealers have good stocks of standard sizes. One dealer in going over his stock pointed out that of the number of machines on his floor only two were of sizes not used in almost every shop using metal working machinery, and yet he found it difficult to make sales. Reports from supply dealers indicate that that branch of business has been adversely affected. Money seems to be as scarce as it has been for the past few weeks and is causing much difficulty in the transaction of business. Companies are conserving their resources, paying out as little as possible, and consequently collections are bad.

There is a growing demand for machinery from the Northwest and from Canada and Mexico, particularly the two latter countries, from which considerable business has lately been received. This is attributed by some as being due to the fact that the trade has been campaigning for business rather than because there is any industrial boom on in either of those countries. At any rate, it is apparent that there is a good field for export business, and those who have watched the industrial development of Canada especially predict that within the next few years the trade will secure some excellent business from that country.

There appears to be a good demand for sugar machinery just now, judging from inquiries that have been placed before the trade and projects which sugar machinery men have heard of. One of the largest of these is that of the Cuban-American Sugar Company, a subsidiary corporation of the American Sugar Refining Company, which is to practically double the capacity of its Chaparra factory at an expense of nearly \$2,000,000. The company has New York offices at 107 Front street, and Samuel Vickees is the consulting engineer. The San Cristobal Company of 106 Wall street has decided to double the capacity of its Porto Rico plant at San Cristobal, which has a capacity of 500 tons a day. This project will entail the purchase, it is understood, of considerable in the way of power equipment, cane handling machinery, &c.

The next joint conventions of the American Supply and Machinery Manufacturers' Association, the National Supply and Machinery Dealers' Association and the Southern Supply and Machinery Dealers' Association will be held at the Jefferson Hotel, Richmond, Va., on May 14, 15 and 16, 1908. This meeting was decided upon by the executive members of the three organizations at a session recently held, and efforts are being made to get out a full attendance of the members of the associations. F. D. Mitchell, secretary-treasurer of the American Supply and Machinery Manufacturers' Association, has sent out an announcement to the members of that association advising them that rooms can be secured at once for the convention.

Plans of the Tata Iron & Steel Company.

Plans are now being drawn for the works to be erected in India by the Tata Iron & Steel Company, Ltd., of Bombay, India, whose enterprise was described in *The Iron Age* of July 12, 1906. The technical details are being worked out under the supervision of Charles P. Perin, consulting engineer to the company, who has offices in this city in the United States Express Company's Building, 2 Rector street. It will be some time before the buying for the enterprise will be begun, but it is expected that Mr. Perin will supervise those details, and it is stated that they will be worked out as rapidly as possible. The company, the capital for which was mostly subscribed in India, plans to spend in round figures about \$7,000,000, and it will erect blast furnaces, open hearth steel furnaces, rolling mills, coke ovens and other departments necessary for the manufacture of pig iron, steel rails, cars, plates, &c. The company has extensive ore properties in India, and it is proposed to erect two blast furnaces of about 200 tons capacity each, several 40-ton basic open hearth furnaces, a blooming mill, rail mill, beam mill, three merchant bar mills, &c. In addition to this the company will probably come into the market for a large

amount of mining and ore handling equipment. The Julian Kennedy-Sahlin Company, Ltd., London, England, which was organized some years ago to remodel British steel plants, has been engaged as engineers on the work and Mr. Sahlin is now in this country in connection with the project.

It has been the general talk in the trade for some time that the New York Central Railroad was in need of a large amount of mechanical equipment, and it has been generally understood that the company would come into the market as soon as funds were available. The matter of providing money for improvements is now under consideration, and the different departments have put in statements of the amounts that will be required for next year. It may be some time before the road is in position to set apart any large amount of money for improvements, but nevertheless it is of interest to the trade at this time to know that the motive power department has asked for over \$2,000,000 for the purchase of new equipment next year.

The Erie Railroad will in all probability do some purchasing shortly for improvements which are under way at Salamanca, N. Y., where the company is spending about \$75,000 in the construction of a new crippe yard for the repair of crippled cars and engines, with a capacity of about 150 cars; a wheel pit, shed 30 x 40 ft., to be used for finishing locomotives; material platform 30 x 340 ft., and a small maintenance of way shop.

In denying the report that it is absorbing the stock of the Westinghouse Electric & Mfg. Company, the General Electric Company, Schenectady, N. Y., made a statement that is of interest to the machinery trade. The business of the company has been so prosperous that it is going ahead with improvements and contemplates the erection of a large addition to its plant at Schenectady, preliminary work on which is said to have started. This, coupled with the report printed a few weeks ago that the company was going ahead with the construction of its new plant at Erie, Pa., will undoubtedly bring some good business to the trade.

Owing to the present financial conditions the Duquesne Light & Power Company, Pittsburgh, Pa., of which Robert C. Hall is chief owner, is not doing any construction work on its new plant nor is it purchasing any new machinery. The trade has been following this project rather closely because of the large amount of equipment it would have to purchase for carrying out its plans, which include the erection of a large power plant upon 4 acres of ground on the Monongahela River, at a cost of over \$1,000,000. It is probable that when financial conditions become normal the project will be carried to completion.

The Bell Electric Motor Company, 140-142 Prince street, New York, has been doing considerable buying of late for a plant at Garwood, N. J., into which the company is moving its factory from 435-437 West Broadway, New York. The company has a tract of land at Garwood about 8 acres in extent, consisting of a main erecting building, 100 x 200 ft.; main repair shop, 50 x 175 ft.; power plant, 40 x 60 ft. The company has installed a boiler plant and a hot air system of heating, and is arranging to run all its machinery with individual motors. The power plant will be of about 100 hp. The company manufactures motors and dynamos for power and lighting and does a general electrical engineering business.

The recent fire at the plant of the Cornplanter Refining Company, Warren, Pa., destroyed the filtering and compounding departments, but not the portion of the plant where the engines and boilers are located. The principal loss is on tankage, buildings, fittings and merchandise, including 8 or 10 pumps and one gas engine. All of these will be replaced as soon as possible, and in addition to the reconstruction of the part of the plant that was burned the company expects to erect a large barreling plant. Construction work will be started this week.

Next spring the Andes Smokeless Fuel Company, Pittsburgh, Pa., will be in the market for boilers, engines, grinding, crushing and conveying machinery and other equipment for a new plant it is to erect for the manufacture of artificial smokeless fuel. The company will be organized with a capital stock of \$100,000 by T. Moran, Ferguson Building, Pittsburgh, Pa., and associates, who are preparing to erect the plant and have it in operation next spring.

The Waterbury Farrell Foundry & Machine Company and the Waterbury Machine Company have opened a joint agency in New York, with E. T. Mathewson in charge. Mr. Mathewson has taken offices in the West Street Building.

Chicago Machinery Market.

CHICAGO, ILL., November 19, 1907.

Under the continued stress of money stringency, which is still acute here, and elsewhere throughout the West, trade in machinery has fallen off somewhat, even as compared with the reduced business of recent weeks. Industrial operations are, perforce, limited to the execution of work in hand, since no matter how strong a concern may be financially, funds are not now available for any exten-

sion of its undertakings. It is readily appreciated that under such circumstances there can be but little demand for machinery of any kind; and until the situation is relieved by a better supply of currency, it is plain that no material betterment can reasonably be expected. In an effort to mitigate the difficulties experienced by employers in securing currency for payrolls, the Chicago banks have finally issued Clearing House checks in denominations of \$2, \$5, and \$10. While it is too early to judge to what extent this expedient will be effective in meeting the needs of the case, it is believed that very favorable results will follow the increase of circulating medium thus afforded. A good many men have been, and more are being dropped from payrolls in nearly all lines. But retrenchment of this sort is due in many cases more directly to want of ready money than to lack of orders. In fact some plants with live unfilled orders that would justify continuance, for a time at least at full capacities, have laid off men.

Among machine tool dealers it is noted that stocks have largely increased of late. Incoming shipments constitute the principal movement, there being but few outgoing consignments. A few fairly good lists for railroad and other requirements, on which bids have been submitted and were about ready to be closed, are held up waiting developments. There have also been some out and out cancellations, and requests for postponement of delivery are frequent. Though realizing the gravity of conditions responsible for the present dearth of business, the more optimistic of the trade express the belief that when the financial crisis is past a good many of these orders may be reinstated. It can scarcely be said that any one line of machinery is more favored than another, as the causes operating in restraint of trade have borne with equal force upon all. If the results expected from the introduction of clearing house checks are realized, business should in the near future show some improvement, but until circulation of currency is restored to its normal volume, there will be more or less hesitancy on the part of buyers to make any engagements beyond those necessary for immediate requirements.

The United States Reclamation Service, 877 Federal Building, Chicago, is asking bids to be opened November 25, on a lathe to be used for rough machine work, yet requiring accuracy in its operation. A 32-in. swing, clear over runways, is required, with a maximum of 3 ft. between centers. The tool is to be belt driven from countershaft, with step cone pulleys for change of speed. This department is making plans that will require the use of some hydraulic pipe and heavy gate valves to be used for dam outlets under a water head of 250 ft. Specifications will call for either 500 ft. of pipe, 36 in. inside diameter, or 250 ft. 48 in. inside diameter, with eight 36-in. gate valves for the former, or four 48-in. gate valves for the latter, according to which it is finally determined to use. Pressure on these valves will be from one side only. Bids will also be received to November 29 on an automatic stop valve to operate against 350 lb. per square inch in oil, and a motor cut out for direct current motor.

The Board of Education, Chicago, opened bids last week on a small amount of machinery equipment for the Lincoln School, orders for which it is understood will be placed without delay. Specifications for additional equipment required for other schools will be issued within the next few weeks. These requirements, though comprising a comparatively small number of tools, will in the present state of the market be welcomed by machinery dealers.

The Chicago, Milwaukee & St. Paul Railroad is now engaged in rebuilding its woodworking shop at Milwaukee, which when completed will require new machinery equipment. It is expected that a requisition for the machines needed will be issued at an early date.

The car and paint shops of the Iowa Central Railroad at Marshalltown, Iowa, were totally destroyed by fire on October 25, the loss amounting to approximately \$100,000. The company has announced its intention to rebuild and reequip these shops immediately, and plans for the work are now under way. A list of the machinery required is not yet completed, but it will include an entirely new equipment of woodworking and other machinery necessary to refit the new buildings throughout.

The Fellwock Automobile & Mfg. Company, Evansville, Ind., is erecting a new garage for the repair department for which several machines will be required.

The Burlington Junction Electric Light & Power Company, Burlington Junction, Mo., has under construction an electric lighting plant which will require an outlay of about \$8000. The company, which is incorporated with a capital stock of \$10,000, is now in the market for machinery equipment, including a 60 k.w. generator, 100 hp. producer gas plant, transformer, &c. Jesse A. Ringold is superintendent.

The Mitchell Illuminating & Power Company, Mitchell, S. D., has been organized with a capital stock of \$100,000 to take over the property and business of the defunct Mitch-

ell Gas Company, which is to be disposed of at receiver's sale. It is the intention of the new company to install a water gas plant instead of the acetylene plant heretofore operated for illuminating. The electric plant will also be overhauled and improved by the installation of new machinery. It is estimated that \$60,000 will be required to complete the work of construction and improvement contemplated.

Plans and specifications are being prepared and bids will soon be asked upon material and equipment required for improvements to the pumping station and distributing system of the Grand Rapids, Mich., water works. The new work proposed includes the installation of a 12,000,000 gal. triple expansion vertical pump, the raising of present stand pipes, remodeling pumping station buildings, modernizing the boiler plant, and the laying of additional mains. This work will be executed under the supervision of Samuel A. Freshney, secretary and general manager of the Board of Public Works.

The Hildreth Mfg. Company, Lansing, Mich., manufacturer of high grade marine engines and gray iron castings, at a recent meeting of its stockholders and directors, elected the following officers: R. H. Scott, president, succeeding Lawrence Price; E. F. Peer, vice-president; N. E. Hildreth, treasurer; C. E. Bement, secretary and manager. The company reports a substantial growth and is now operating two plants, one of which is devoted to the manufacture of marine gas engines, and the other to foundry work. In addition to a large domestic trade on its engines, the company has during the last year shipped a number of its machines to foreign countries.

Cincinnati Machinery Market.

CINCINNATI, OHIO, November 19, 1907.

Not for years, perhaps never before in the history of this important tool manufacturing center, have there been marked such sudden transitions from tremendous and unremitting industry to a state of less than normal occupation, thence again to renewed energy and hopefulness, all within the short space of a month or six weeks. This picture is well illustrated by the experience of a number of the largest tool making establishments in this city. The month of October brought many cancellations from dealers, and there was practically no business at all; the order book was thus reduced from a two and three months' future delivery to a condition approximating practically immediate delivery within a very few days, and with the enlarged payroll and shop capacity of August and September, tools began to accumulate on the stock floor. It was this condition, superinduced entirely by the sudden stringency in the money markets, that induced many of the larger establishments to lay off men or reduce working hours, or both.

The first half of November is just finished; the experience of establishments under discussion is fairly representative of many others in this section. The business of one concern for this period exceeded that for the entire month of October. Inquiries have begun to come in, and one order is now being negotiated for 16 lathes for domestic shipment. Inquiries at most of the larger tool making concerns here show that the bulk of cancellations are past; later ones have been more of the character of delay shipments, and some have even asked that their original orders be replaced for shipment, shrewdly calculating that by this means they can get their tools much earlier than originally promised and thereby be the first in the field to reap the benefits of the improved market confidently believed to be not far distant.

Another interesting development of the times is the quietly engineered, but none the less forceful, plans of Cincinnati interests for invading fields not hitherto worked by the tool manufacturers. A quiet investigation has been going on for some time, with excellent results. Several returned manufacturers from the European markets speak encouragingly of the situation, which sees a gradual increase in importance of American tools, but note a general depression in England and Germany, which has affected business adversely. C. Wood Walter of the Cincinnati Milling Machine Company is the latest returned of the Cincinnati travelers. He is very optimistic on the situation of foreign trade and believes American tools are making great strides in foreign marts.

Probably the most encouraging features of the week past have redounded to the benefit of the manufacturers of electrical equipment. One of the local concerns making generators and allied lines of smaller and medium units has just received an order for a 60 days' delivery on \$15,000 worth of electrical equipment, \$5000 of which goes to the Northern Pacific Railroad and the remainder to closely allied corporations, principally mining industries, on the lines. The general manager of this company feels no anxiety for the future and believes the present slump already in its last stages. No men have as yet been laid off, and

negotiations are in progress for an enlargement and extension of the business in a new field already laid out and started by several of the largest manufacturers in Oakley, an important suburban manufacturing colony.

Another encouraging factor in this field is noted in the resumption on Monday of operations by the Newport Rolling Mill Company, whose payroll is \$22,000 semi-monthly. The plant was closed down November 9 in all departments, because, as frankly stated by President Andrews, of the inability to get currency for the payroll. This difficulty has been relieved in the interval, which also enabled it to do some needed repairing, and now one-half the sheet mills are again in operation, with the probabilities strong for an early resumption of all departments. President Andrews reports plenty of orders on hand and believes the worst of the depression to be over. The new mill of this company under construction is expected to be completed and ready for business by April 1.

At the plant of the Cincinnati Planer Company there have as yet been no men laid off and it is running full time on orders which justify.

Those concerns making shapers seem also to be less affected by the prevailing depression, for but comparatively few men have been laid off in any of these establishments and they are in the main running on heavier time. It is found that the greater proportion of cuts in men and time have been made by the larger establishments, and this is explained by the fact that these concerns first and earliest felt the stimulus of increasing demand, both domestic and export, and having the bulkiest order books, were the first and the most severely hurt when cancellations commenced.

In the matter of contemplated rearrangement of contracts between the manufacturers and the foundrymen, a meeting will be held on Wednesday by the committee appointed by the toolmen to formulate a proposed basis of contract, and the same if agreed upon will be submitted to a committee of foundrymen, and then to a general meeting to be called of all buyers of castings, with the hope that the new form of contract may be put into effect on the first of the year, when most contracts are renewable. As already stated in *The Iron Age*, there exists a difference of opinion on the proposed movement, and while some are favorable to a revised form of the sliding basis schedule now popular, others maintain that the only just and equitable form of contract is an individual one, based on the individual requirements and patterns of the manufacturer in question, which differ materially in different shops.

The property of the Bracket Bridge Company, in charge of Bankruptcy Referee W. H. Whittaker, is to be put up again on December 13, at 11 o'clock, on the premises, near Glendale. The first call for bids brought but one offer of \$12,500. The fund accumulated in the hands of the trustee amounts to nearly \$90,000, and is held to await the decision of Judge Thompson on the claims of the Western German Bank, which are asserted to be preferred in character.

A substantial improvement which will be made early in the new year, and which will call for a good sized list of machinery specifications, is the enlargement of the foundry plant of the C. W. Raymond Company, Dayton, Ohio. This company has just purchased a tract of 5 acres on the line of the Cincinnati, Hamilton & Dayton Railroad in North Dayton, directly opposite the Craig-Reynolds foundry, and will invest about \$100,000 in buildings and machinery. Mr. Raymond has been deterred somewhat in his plans through the tightness of the money market, but has stated that he will not abandon any of them and that he will begin work early in the spring. The firm was incorporated in 1880 and now employs about 175 men.

The Means Foundry & Machine Company, Steubenville, Ohio, has shut down a part of its plant and laid off half its force for an indefinite period.

E. J. Marshall, C. W. West, George C. Bryce, H. W. Fraser and A. H. Miller have incorporated the Westlake Machine Company at Toledo, Ohio, for \$10,000. The company is building a plant on Islington street, near the Michigan Central tracks, and it is announced that it expects to be ready for business in 60 days. It will manufacture special automobile machinery.

Springfield manufacturers are optimistic, and in several of the plants new additions and important alterations are to go ahead early in the new year. The stockholders of the Farmers Co-operative Harvesting Machine Company have voted to confine its product the coming season to wagons and manure spreaders.

The new officers of the Early Sun Stove Company, recently incorporated at Newark, Ohio, are: President, Charles Dean; vice-president, Edward Mathias; superintendent, George Wise; secretary-treasurer, William Maholm. The company will manufacture gas and coal heaters, claimed to be the first cast iron gas heater put on the market. One hundred molders are on the payroll at present at the temporary foundry located in Somerset, Ohio. It is understood that eventually the works will be moved to Newark.

Vincennes, Ind., citizens are pleased with the progress of the National Rolling Mill Company since its location there some time ago. It is claimed that the month of October

saw the largest output in the history of the company's operations, and Saturday, November 9, was recorded as the largest payroll, \$12,000, a semimonthly installment. About 450 men are now employed at the mill.

W. P. Chapin of Shelby, Ohio, and H. P. Lamoureux of Mansfield, Ohio, have leased the Union Foundry, at 171 North Walnut street, Mansfield, and are doing a general jobbing business.

Officials of the Barney & Smith Car Company, the Dayton Malleable Iron Works Company and the Davis Sewing Machine Company interviewed in Dayton, Ohio, say their concerns have not been affected in the least by the financial stringency and that their business was never in a more prosperous condition.

In the matter of the suspension of the Weber Foundry Company, Cincinnati, November 25 has been set as the date for the appointment of a liquidation trustee in the United States Courts, and steps will then be taken to either start the foundry or dispose of the machinery and fixtures, which are considerably above the average.

Philadelphia Machinery Market.

PHILADELPHIA, PA., November 19, 1907.

Retrenchment policies are becoming more pronounced from week to week, and the effect on the various branches of the machinery trade becomes more and more noticeable. The financial situation continues to exert a depressing effect on the trade in general, and while there appears to be some improvement in the supply of funds, it has been limited and the situation is by no means satisfactory. While there is confidence expressed in the ultimate improvement of the situation, it will no doubt require quite a long time to restore business to a normal basis. The action of the railroads, as well as some of the industrial concerns who have in various ways announced their policies of curtailment for the coming year, is not very encouraging to the trade, and has also had a depressing effect on the smaller manufacturer as well as the consumer, and has forced them to adopt to a large extent the same policy. The immediate outlook for business, therefore, cannot be said to be very hopeful, and the trade generally expects a dull winter.

Sales have been very light the past week. The demand has been confined almost entirely to the smaller class of the standard types of equipment, and orders for the greater part have been limited to single tools. Merchants are making every effort to dispose of their stocks, which have recently accumulated considerably, but find it difficult to get customers to place business, even though the tools might be badly needed. Prices in some cases are being firmly maintained. In others, however, it is said that some concessions have been made, but it is contended that under present circumstances there are many cases where buyers will not take hold at any price. Inquiries are scattered, and it is reported in some instances that prospective buyers state when asking for prices that they will not commit themselves to place business. Manufacturers find difficulty in sizing up the situation. Some have considerable business still on the books, enough to keep them fully occupied for several months, provided no further cancellations develop. In other cases orders on hand have been fairly well caught up with, and plants are being operated on business which is picked up from day to day. Under such circumstances curtailment policies have been pronounced, and a number of plants are working on reduced time or with decreased forces.

There is but little business pending for export. Foreign demand has been light, and practically nothing new has developed in the way of orders for the usual standard machine tools. Some little business has been taken for special tools and machinery, but the volume is small. There has also been some falling off in the volume of business transacted by those who have an established trade abroad in the smaller specialties.

Boilers and engines have not been in active demand. The general situation has affected this, as well as other branches of the trade, and new business is extremely light, while propositions of any size which have been under consideration have in many cases been held in abeyance.

Second-hand machinery dealers report business quiet. Sales are confined to the medium and smaller tools, usually in single lots. Retrenchment policies have affected this branch of the trade, as well as others, and the volume of business generally has been light.

Foundries are not actively engaged. Business develops slowly, owing to the decreased volume of trade in other lines, and some foundries find it difficult to get enough orders to keep them even moderately engaged. Gray iron and steel casting plants are equally affected and business coming in is mostly of the day-to-day character.

The Philadelphia & Reading Railroad, through its chief

engineer, has asked for bids for part of the work in construction of the elevated railroad along Ninth street. Proposals are asked on the following contracts: No. 5, masonry, trestle and embankment from Berks street to Susquehanna avenue. No. 7, for the same class of work from Susquehanna avenue to Broad street. Contract No. 8, bridge from Berks to Broad streets. No. 14, masonry, embankment and paving for yards at York and Cumberland streets, and contract No. 26, temporary engine yard at Wayne Junction. These contracts only cover a portion of the work, the whole operation being divided to facilitate work. Proposals are due December 17, and specifications can be had from the chief engineer, Reading Terminal.

The chief of the Bureau of City Property, Philadelphia, has asked for an appropriation from City Councils for a large amount of general work, among which was an item of \$158,000 for repairs and improvements to the elevators in the City Hall.

We understand that the plans of the Board of Commissioners of Abington Township, to have an old bridge over the Reading Railroad at Noble, near this city, replaced with a new one, will meet with success. The township, the Rapid Transit Company and the Philadelphia Railroad Company are equally interested in the building of the new bridge, and it is expected that plans for a concrete and steel bridge to replace the present one will shortly be made.

The Chester Forging & Engineering Company, Chester, Pa., is still working overtime, averaging three and four nights a week. Enough business is on the books to keep the plant busy for many months. The new plant of this concern, previous mention of which has been made, is coming along very rapidly. The boilers have been installed, and foundations for the engines, machinery and furnaces are all under way. One large steam hammer has been set up, and it is expected that the new equipment, which has already been purchased, will all be installed by January 1. This company contemplates further additions to its plant, which, however, will not be taken up until next spring.

The Stoever Foundry & Machine Company, Myerstown, Pa., continues fairly busy. Inquiries are being received in a moderate quantity, but are largely contingent on financial conditions, and it is thought that orders will not be placed in quantity until the financial situation is improved. More business, this company notes, has developed in the West recently than in this territory, and some fair orders have been received from that section.

Cleveland Machinery Market.

CLEVELAND, OHIO, November 19, 1907.

With no relief as yet in the local financial stringency the machine tool market shows no improvement over a week ago, business being pretty much at a standstill. The retrenchment policy adopted by various manufacturers of iron and steel products because of the tightness of the money market, which made collections almost impossible and caused great difficulty in securing funds to keep their plants in operation, is still in force, and plants will continue to run at largely decreased capacity until the situation is relieved.

While dealers in machine tools are making little effort to get new orders, they are making a few sales of single tools, and quite a few fairly good inquiries are coming in. In fact there is some good business in sight, which is waiting for the easing up of the money market and the return of confidence in future conditions. Some of the inquiries are for machine tools for new plants and others for the enlargement of present plants. The prospective purchasers all say, however, that they will all hold off until the first of the year and await developments. These inquiries lead dealers to believe that with the return of fairly satisfactory conditions within the next few weeks there will be a reasonably good demand for machine tools. While orders for machine tools are very scarce at present, dealers report that the demand for mill supplies is holding up fairly well. A number of large industrial concerns in this territory need additional shop equipment, but must wait until the present depression is relieved. An example of the situation is shown by a large plant that prepared a list of machine tools that it needed and sent it a few days ago to its Eastern headquarters for approval. The list came back promptly, endorsed across its face, "Nothing Doing."

With a temporary absence of more than a limited number of domestic orders local machinery and machine tool builders are looking with more than usual appreciation on their foreign business, which is holding up in good shape, although some manufacturers note a slight falling off in their Canadian trade. Builders of heavy machinery that depend largely on the railroad trade are feeling the effects of the present depression the most seriously. Crane builders, for example, are getting very few new orders, but they are fortunately situated in that the majority of the crane building plants have work on hand to keep them busy for some time.

The demand for mining machinery has also fallen off heavily because of the difficulty in financing large mining operations. The tight money market has also affected the agricultural implement makers, who report that their customers are holding back on placing orders.

In spite of the present unsatisfactory conditions manufacturers are mainly optimistic about the future. They believe that the present depression is due almost solely to the financial stringency, and that when the financial situation is relieved there will be a return of confidence and a fair amount of business.

C. C. Mason, who is connected with the sales department of the Browning Engineering Company, Cleveland, returned home a few days ago from a four months' business trip through Europe. Mr. Mason found conditions very satisfactory for the extension of American machinery trade through European countries at the present time. He reports that when he sailed for home business conditions were improving in England, and that manufacturing plants were very busy in Germany, employers having trouble in getting sufficient help.

The Globe Brass Mfg. Company, Cleveland, has been incorporated with a capital stock of \$50,000 by Christian Bohn, F. C. Schaefer, William B. Bohn, Henry F. Schroeder and William F. Beek. Christian Bohn will be president; E. H. Bohn, treasurer, and W. B. Bohn, secretary. The company has leased quarters at 418 Prospect avenue, S. E., which will be fitted up for a manufacturing plant. The company will manufacture plumbers' brass goods. It has purchased a portion of its equipment, and will be in the market for more later. It is expected that the plant will be in operation about March 1.

The Alliance Machine Company, Alliance, Ohio, is running its plant at full capacity and reports enough orders on its books to keep the plant in full operation for the next six months. New orders have not been plentiful the past few weeks, but the company has received no cancellations, although some customers have asked that shipments of cranes, bought for delivery at the end of this year, be withheld until April.

The Threading Machine Company has been incorporated at Sandusky, Ohio, with a capital stock of \$25,000, to manufacture a new pipe threading machine. The incorporators are R. E. Schuck, J. J. Dauch, W. H. Millspaugh, Sidney Frohman and George A. Blackford. The machine will be made at the plant of the Sandusky Foundry & Machine Company, in which the incorporators are also interested.

The Royal Motor Car Company, which recently completed a large new plant in Cleveland, was placed in the hands of a receiver last week. The action was brought to tide the company over embarrassment, due to the financial stringency. According to the statement of E. D. Shurmer, president, the company is perfectly solvent, and is suffering from nothing more serious than a rapidly growing business coupled with a stringent money market. According to a financial statement prepared September 1, the company has assets amounting to more than \$650,000 in excess of liabilities.

The Chanute Cement & Clay Products Company, Chanute, Kan., has decided to go ahead at once with the erection of a large cement plant in that place. The project was launched several months ago, but held up for some time. The Osborn Engineering Company of this city will receive bids for engines, boilers, grinding machinery and other equipment. About 3000 hp. will be required. The plant will have a daily capacity of 3000 barrels.

Owing to delay in construction work, the equipment for a new foundry being built by the Bay View Foundry Company, Sandusky, Ohio, will not be purchased until spring. The Osborn Engineering Company, of this city, which prepared the plans, will receive bids for a 15-ton electric traveling crane, two gas engines, sand blast, tumbling barrels and other foundry equipment.

State Treasurer W. S. McKinnon and several associates have incorporated the McKinnon Iron Works Company, Ashland, with a capital stock of \$150,000.

J. J. Murray and Samuel Siegrist have leased the building occupied by the Guenther Planing Mill Company in Coshocton, and will fit it up for a garage and automobile factory. They will manufacture special model machines. The business will be conducted under the name of the Siegrist-Murray Automobile Works.

The Fulton Tool Works Company, Canal Fulton, has been incorporated with a capital stock of \$17,500 by S. S. Bliler, Mattie E. Bliler, John Hammer, Iris C. Hammer and Purcell Hammer.

With a capitalization of \$50,000, the Mann Indicator Mfg. Company has been incorporated in Alliance to manufacture a street car indicator. The incorporators are Peter J. Mann, F. D. Gagnier, Fred Zurbrug, Albert Stevens and David Fording.

The Bucyrus Steel Castings Company, Bucyrus, Ohio, is having plans prepared for an addition to its plant, 150 x 400 ft., of steel and brick. It is expected that work will be started early in the year.

The Board of Public Affairs of Minerva, Ohio, will re-

ceive bids on December 4 for a 150-hp. boiler, with 150-lb. steam pressure.

W. P. Chapin of Shelby, Ohio, and H. P. Lamoureaux of Mansfield have leased the Union Foundry, Mansfield, from John B. Niman, and will do a jobbing business in castings.

New England Machinery Market.

WORCESTER, MASS., November 19, 1907.

A more hopeful feeling prevails in the trade. Confidence is becoming more pronounced that with the beginning of 1908 a change for the better will be noted and that business will gradually improve from that time. The most conservative observers share in this belief, which, though originally begotten from desire and hope, is considered to be based upon sufficiently logical reasoning. Actual new business is little if any better, though several of the manufacturers have booked good orders during the past week. One such order was for 10 engine lathes for Russia, another for 20 upright drills. A recent order included 17 engine lathes for the Argentine Republic. Several New England machine tool builders have received Japanese orders, and it is hoped that a share of large business, specifications for which are known to be prepared, both for the Japanese Naval Department and for private concerns of that country, will come this way. The trade has several startling rumors of 2000 lathes ordered by Japan from one New England builder, and some hundreds more from another, but there is apparently nothing upon which to fix the authenticity of the reports. If large business from this source has been received, the recipients are keeping it very quiet, which, however, according to some of the dealers, would be entirely natural, as the Japanese have the habit of exacting a pledge of secrecy at times.

Collections continue to be very slow; in fact, they are nearly impossible in many cases, because customers are equally unable to collect their own accounts, the condition extending through long lines of industries. Some customers are showing a disposition to make something out of the scarcity of money by asking additional discounts on bills already due, but they are not meeting with much success in this respect. Business men are not in such straits as to be willing to pay prevailing currency premiums in order to collect accounts that are due them.

While machine tool production has been materially decreased by the laying off of men and the shortening of hours, there are some important exceptions to the rule. It is not that anyone is receiving any great amount of new business, but that some of the manufacturers have suffered little from cancellations, and had enough business on their books when the depression began to keep their shops running full for a considerable period of time. What is true in the machinery business is equally true in general metal manufacturing, though as a rule curtailment is less as the product gets closer to the consumer. Certain lines, as some of the textiles, which until now have been affected but little, have been compelled to reduce production during the past few days, usually because of reasons which include others besides lack of orders.

The average curtailment is large among the machine tool people, but it is not so great as would be gathered from published newspaper accounts, some of them exaggerated, of instances picked here and there as extreme illustrations of prevailing conditions. A few cases tell the story of the experience of New England machine tool builders, the ratio between the better and the worse probably extending among those concerns which are not enumerated. It should be stated in modification, however, that some of those that are still running with undiminished payroll may have to restrict productions later on. The present condition in some establishments is as follows:

Hendey Machine Company, Torrington, Conn., lathes, milling machines, shapers, running 60 hours a week with full force of 650 men and with orders on the books to keep the shops full until beyond the end of the year. The only let-up has been that the shops are no longer working overtime as formerly.

F. E. Reed Company, Worcester, lathes, operating on full time with working force unreduced, filling orders and manufacturing for stock.

Woodward & Powell Planer Company, Worcester, running full time with full force.

J. E. Snyder & Son, Worcester, Mass., upright drills, now located in a new and much larger shop, operating 58 hours a week, its regular time, with the largest force in its history. Very few cancellations have been received, the firm reports. There are orders on the books to keep the shop running full until March.

Boynton & Plummer, Worcester, drills, shapers, &c., business keeping up fairly well, though orders have fallen off to some extent. The company is operating on full time with a practically full force of men.

The Norton Grinding Company, Worcester, cylindrical grind-

ing machines, operating with full force on full time with full equipment.

These are the most favorable reports recorded from personal inquiry. Against them, in considering the average of conditions, are the following:

Prentice Bros. Company, Worcester, lathes and drills, operating 40 hours a week, with nearly full working force. The company reports having received some new business during the past week.

Whitcomb-Blaisdell Machine Tool Company, Worcester, planers and lathes, running 35 hours a week, and has laid off about 75 men out of the 325 employed, including the foundry.

The Bullard Machine Tool Company, Bridgeport, Conn., boring mills, lathes, drills, operating on about a two-thirds payroll.

H. G. Barr, Worcester, sensitive drills, reduced his force from 30 to some half dozen men.

Stockbridge Machine Company, Worcester, shapers, running 36 hours a week with undiminished working force.

Francis Reed Company, Worcester, sensitive drills, running 50 hours a week, with about 75 per cent. of its force.

The Robbins Machine Company, Worcester, engine lathes, laid off a few of its men.

The American Tool & Machine Company, Boston, lathes and sugar machinery, laid off a portion of its working force.

The General Electric Company, Lynn, discharged more men and the United Shoe Machinery Company, Beverly, decreased its working force.

Stocks of raw materials and finished products are becoming more depleted each day. The most rigorous inspection of requisitions is being practiced. Manufacturers are learning how to operate on the minimum of expenditure. But they know that it will not be long after the turn comes that they will be in the market for raw materials and supplies of all sorts, and they realize that every one else is in the same condition and will do likewise, which fact will in itself be a smart impetus toward a renewal of activity in many manufacturing lines.

A strict adherence to prices is still the rule, it is agreed. One hears no complaints among the dealers of their competitors shading the lists, and such incidents are sure to have quick and widespread circulation in the trade. The manufacturers are warning their dealers of the dangers of a break in prices. Some concessions may be made without injury, as in exceptional instances on freights, changing the f.o.b. point, but these occur at all times and are not considered objectionable. With second-hand tools it is different. No one cares very much what such tools go at; that is to say, the fact that a competitor sells a second-hand tool very cheap would provoke little, if any, unfavorable comment. Those second-hand tools that are being sold are going at low figures, though as a rule at some profit. In a few cases dealers have been contented to convert machinery into money at cost, but not below cost.

These are samples, both of the good and the unfavorable in the machine tool business. It should not be lost sight of in considering curtailment that manufacturers are not influenced by the falling off of orders alone. There are other important elements. The weeding out of undesirable employees is a factor. So, too, is the growing conviction that wages are altogether too high for the present market; to lay off men is one way of effecting a decrease, for they will be hired back at lower figures. Some machine tool builders share the belief of manufacturers in other lines that it is not the best policy to manufacture for stock at present prices of raw materials. A most important influence, of course, equalizing, perhaps, the falling off of orders, is the financial situation which makes collections difficult and bank accommodations, to tide over the payroll until bills due can be collected, not easy to obtain.

The New England shipyards are busy; no effect of the general unfavorable condition of business has been felt. This applies not only to the large yards, which would not naturally be reached by a slump in conditions as soon as this, but also to those works that do repair work, build engines and other equipment, and are called upon for all kinds of machine work that is constantly necessary for the maintenance of steam vessels. The yards that devote themselves to the construction of wooden vessels, especially for the coast trade, are satisfactorily supplied with work, in comparison with other years.

The Chandler Planer Company, Ayer, Mass., is giving a public demonstration of a new clutch planer at its shops to-day and to-morrow, at which a large number of machinery people and users of planers are in attendance. The machine is a very heavy one, a broad belt being employed to drive, and the clutch is of the disk friction type, operated by the platen dogs. A second belt furnishes the return drive of the machine.

The Gilbert Transportation Company, Mystic, Conn., which conducts a shipbuilding and repair yard and does business as ship broker, owner and manager of sailing vessels, has increased its capital stock from \$500,000 to \$2,500,000, with the intention to keep on building and buying sailing vessels to be employed in the Southern lumber trade. Future developments will consist of building a floating dry-dock and of improvements in the shipyard, as well as the erection of a four-story brick building for offices and stores. The company now owns 21 vessels—three, four and five masted schooners.

Agitation of the question of standardizing certain parts of engine lathes has begun again, the dealers, who are espe-

HARDWARE

AT this time when business men are desirous of having the fullest information in regard to the financial and commercial conditions which prevail throughout the country the letters of our special correspondents, which are given on the following pages, will be read with peculiar interest. The situation has developed in so startling and surprising a manner, and contains so many perplexing elements, that the views of the writers of these letters, men of high standing and wide experience, possess exceptional significance and weight. The problem is such as to command their most careful consideration, and their advices are of value as reflecting the conclusions reached.

Our correspondents agree in recognizing that the disturbance is primarily and essentially financial, rather than commercial. Whether it is to be credited mainly to Wall Street, to defects in our banking system, which should have been long ago corrected, or to other untoward influences, there is no doubt that the trouble results from the disappearance of money from circulation, causing a scarcity which is embarrassing to all merchants and manufacturers, and to none more than to those who are obliged to meet payrolls which call for the prompt and regular outlay of large sums of money. The reasons for the disappearance of the circulating medium, which is hoarded by individuals and by banks, are not discussed by our correspondents, among whom there would very likely be, as there is among the people at large, considerable diversity of opinion as to the causes of the existing distrust, which is the root of the trouble.

While our correspondents leave many questions unanswered, it is gratifying to note that there is substantial agreement among them that the financial skies are beginning to clear and a conviction that the worst of the panic is over. The efforts of the great bankers of the country supplemented so efficiently by the Treasury Department, and the good sense, the sober second thought, of the American people, who begin to realize that they were stampeded with a needless fright, have already contributed to the return of confidence in the soundness of our monetary institutions and to a recognition of the great prosperity of the country at large as furnishing ground for a hopeful view of the outcome.

Striking evidence is afforded of the unity of the financial and business interests of the land. While the trouble naturally developed in New York, as the center of finance and trade with which all parts of the country have closest relations, it was not long before its influence was felt in the West and South and in the great States that skirt the Pacific. We are thus reminded not simply that the whole country shares the prosperity or the adversity of each section but of the more important practical fact that the existing disturbance is the result of conditions which prevail in every section. The malady is not local but general. The disturbance is naturally most emphasized in the great centers, but reaches to every State and hamlet. The farmers who cannot sell their grain and the planters who held their cotton too long are companions in misfortune with the holders of depreciated securities; the manufacturers who are

discharging workmen and the railroads which are obliged to postpone betterments. The unity of the country in its business relations has been emphasized in an impressive manner. In a similar way it is to be hoped there will soon be a united restoration of confidence and a gradual return of normal business conditions and a renewed prosperity in every section.

There is, however, the recognition also of the fact that the country is at present experiencing a reaction from the extreme activity which has characterized business, and is suffering the penalty of a long continued prosperity. There has been under the stimulus of great crops a sustained and growing volume of trade and an unparalleled increase in wealth, commercial, industrial and financial expansion, accompanied by lavish expenditure in practically every department of life. The country has been going too fast and must stop to take breath. The indications of the coming reaction were seen by some, who began curtailing enterprise early in the year and made preparation for the reckoning to which there has been so abrupt and imperative a summons. How long the disturbance of business will continue and what will be the features of the resulting depression are questions which await answer. With the great wealth which the country possesses, with its resourcefulness and its recuperative power, with its soundness, monetary and commercial, it is not too much to hope for an early return to normal conditions and the regular course of profitable trade. The cheerful tone of the advices of our correspondents is notable and significant. They do not write as those who are confronted with disaster, but rather as those who are looking out upon a subsiding disturbance, whose passing will leave better conditions and renewed opportunities for enterprise and effort.

Condition of Trade.

The past week has witnessed a further improvement in the feeling of the trade, as there is much more confidence that the financial difficulties will be successfully overcome and business be permitted to take its regular course without undue uncertainty in regard to money matters. As an evidence and result of this better feeling orders are being more liberally placed than at the opening of the month. The volume of current business is, however, light, and manufacturers are not giving much attention to the effecting of sales, but rather to the clearing up of their order books and keeping things running on a safe and conservative basis. There has been a good deal of curtailment in production, involving a laying off of hands and the operation of plants and factories under greatly diminished pressure. With the present uncertainty, if not weakness in the market for raw material and the existing financial stringency, there is little disposition on the part of manufacturers to accumulate stocks, and the indications point to a quiet month or more in many plants. By this reduced production manufacturers aim to save the market from the menace of an overstock, while at the same time they avoid tying up their own capital and also escape loss from a decline in raw material. Changes in price are few, owing to the conservative course which is being pursued by manufacturers generally, and also perhaps to the fact that

buyers are holding aloof from the market awaiting further improvement in financial conditions. That there has been such substantial improvement thus far, with the prospect that in the near future the situation will again permit a healthful business, undisturbed by exceptional financial stress, is a matter for sincere congratulation.

Chicago.

Though affected less than many other branches of business, the Hardware trade is feeling the effects of the protracted tightness of money. Nevertheless, jobbers declare that trade has not been curtailed to the extent that might be expected. The volume of business for the current month will, of course, show some reduction, but so far it has been of moderate proportions as compared with October. Buyers find themselves in somewhat of a quandary when it comes to placing orders for forward requirements. How heavy the demand may be later on when money is easier it is difficult to estimate. At the same time there are many who, reasoning from the latent purchasing power of the country and the moderate stocks in the hands of retailers, believe that too great conservatism in buying now will place them in the awkward position of being unable to promptly supply the demand of the future. On the other hand, caution counsels against overreaching estimates of what will be required to take care of trade that may develop through the coming spring months. From the present viewpoint, clouded as it is by conflicting conditions, there is little to guide one to a satisfactory decision upon this all important question. The result is that action is being deferred as long as possible in the hope that doubts will be measurably dispelled by early developments. In the meantime both manufacturers and jobbers are waiting, which, of course, means that beyond orders for stock assortment little is being done. A hopeful feature of the situation is seen in the very firm stand taken by all interests against any attempt to force trade by demoralizing price concessions. In other periods of depression prices have generally tumbled under fierce competition, and it is only due to the temperate attitude of the trade that they have not done so at this time. It is likely that there will be a more or less far-reaching readjustment of values growing out of this reaction, but it should, and probably will, be accomplished in an orderly manner, that will conduce to the best interests of the producer and consumer alike. Stoppage of the crop movement on account of an inadequate supply of currency is reflected in a somewhat lessened demand for Wire Nails, but it is hoped this will prove to be merely temporary in its effects. It is apparent from the frequency and small size of orders received that buyers are still ordering only short supplies as needed. Incoming orders are beginning to include goods suitable for the holiday trade and indications point to a very satisfactory business of this kind for the next few weeks.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—The present trade situation is certainly better than might have been anticipated if customers generally were not fairly well informed of the splendid conditions characterizing agricultural products, including cotton, throughout the country.

What is now called the Wall Street crisis we feel will largely draw to a close within the next two months. The United States Government is certainly entitled to wonderful credit for the assistance it has extended to the banks through various sections of the country, over \$220,000,000 having been advanced to the banks over the country, which have given proper security. The new proposal by the Secretary of the Treasury offers for sale \$50,000,000 worth of Panama bonds at 2 per cent., intended largely for the banks in sections of the country where products are now ready for shipment, so that they may extend their currency, as the currency in the hands of the banks is insufficient for requirements; also a loan of \$100,000,000 Treasury certificates of indebtedness at 3 per cent. interest is offered. These can be taken up by

banks or individuals throughout the country. Never before has assistance been so largely offered by the Government.

The conditions of the country at large can be fully realized when we think of the fact that over 90 per cent. of all settlements of accounts by manufacturers, jobbers, railroads and various other institutions have been paid by checks drawn by customers on their banks, bills paid for thus reaching other banks and probably distributed to further banks before they come back to the bank on which the checks were drawn. Therefore currency has not been needed, but, unfortunately, present conditions show that a great deal of currency has been drawn from our banks by depositors, who in many cases have feared possibly the failure of the banks, which, in very few instances, is likely to occur. But this has reduced currency, which is more needed than usual owing to the large increase of trade throughout the country.

There is one matter the entire country should realize, that payments for all accounts due either by manufacturers, jobbers or the retail trade or consumers should be promptly made. One payment alone may largely extend to hundreds of persons who owe money, and this does not require currency, but checks may be sent. The persons who receive them deposit these checks, and they draw checks to make their payments, and so it extends from one to another. This will help the country reach the position the Government is trying its best to assist it to reach, all matters being settled so that the products of our country can be shipped to the consumer as well as to foreign countries, the latter fortunately requiring our products. This thing can only be settled now by the offer of the Government and the co-operation of all in paying debts now due, which can be done by proper attention to their own collections.

Those who owe accounts should realize payment is quite essential. Many persons may think the amount they owe is but small, and those they owe will not suffer, but they should bear in mind the few hundreds they owe may go to persons who owe as many thousands, and the persons they are compelled to send to have the same requirements, therefore much can be done for the country at large. It is unquestionably the case that the smaller banks throughout the country are in a better condition to accept the checks of customers who have money with them than the larger banks of the country, and few realize the amount of interest that is to be paid and how much the rate of interest is increased by the largest banks and how little they are prepared to extend their loans. We repeat that the carrying out of the above suggestion would largely improve conditions.

The price of Hardware has not declined, nor can we see how it can do so until raw material has declined, and beyond this until the wages of those employed have declined. Our country has been largely benefited by the advance in wages of employees, but we feel unfortunately that more money could have been saved by employees had they made the effort to do so. But it looks as if everything would be straightened out in a short time if proper attention is given by all to their essential duties.

Boston.

BIGELOW & DOWSE COMPANY.—Trade continues satisfactory, notwithstanding the troubles in the financial world. A record of increased sales and good remittances that equal, of not exceed, the average can only be accounted for by the fact that the country towns away from the cities are moving on in the even tenor of their way with apparent indifference to the happenings in the financial centers. Salesmen in Maine, Vermont and New Hampshire report no excitement, and hardly any reference to the wild prophecies of the journalists foreboding calamity and trouble.

We see no indications of hoarding money or borrowing trouble. A concern doing its usual business and whose customers are paying their bills has no reason to be fearful of the future.

Shortage of currency to meet payments has closed down many mills, and many are running on short time. This will result naturally in a shortage of goods later on, that the mills will be unable to supply.

Comparing the present panic with others that have passed it has been said: "Panics in the past have resulted from a shortage of business, while the present trouble has developed from having too much business or not enough currency. The new Government issue should meet this difficulty, and once removed, confidence should return and trade will continue.

Conservative buying is wise, but the merchant who keeps his stock well assorted will be a winner. Prices are being well maintained and show an advance on Wire Cloth, Steel Goods and Fencing. The trade has confidence in the promises of the large producers that, come what will, their prices will not be reduced. If necessary they will reduce production, but buyers will not suffer loss by any reduction in price.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The inevitable result of the derangement of existing financial conditions has been brought about. As soon as any doubt is cast upon the abundance and safety of floating capital, timidity seizes upon everybody who has it, invested or deposited, as they feel that nothing is equal to actual possession. It is this effort of each one to seize, hold and not let go, which, of course, brings about the stringency. Moreover, during these later years of prosperity when money has accumulated in the country, there have sprung up innumerable small banks with individual capital of \$10,000 and upward. This naturally begot a large number of cashiers and presidents, and in no wise increased the active capital of the country or the currency, either. Much of this money was loaned out freely on what seemed to be secure, to these new fledged bankers, but when the time of test came they found that the assets were not so readily convertible into cash as they supposed.

During the month of October, with all of the admonitory depressing symptoms which were abroad then, there were 38 national banks founded, most of them quite small, this besides city and private banking institutions of which there has been no public record so far as we know. Each one of these banks has its capital tied up, its deposits have been freely loaned as a rule, and those who are intrusted with the management of them through lack of experience or judgment, in many cases find matters uncomfortably close, and this leads to a call on their reserves in the larger cities, which depletes the deposits and currency there just where they are most active and most needed. This is not true in all cases, some of the country banks having their coffers full.

The substitutions in some of the markets of scrip, bankers' checks or clearing house certificates for the authorized national money is a dangerous temporary expedient. There are rumors of liberal counterfeiting in some centers, and, if so, this proposition might be a difficult one to handle.

So far the manufacturers of Louisville and the larger employers of labor have paid off in currency. The only variation from this was seen in the scrip used by one or two of the leading railroads, checks drawn on New York in denominations of \$20. It must be that the railroad companies are favoring the home banks at the cost of ours for they get cash for their service on both freight and in their passenger departments. It would seem as though this currency is utilized for the benefit of some individual or some institution.

We hope that New York will soon be able to set the example of retiring clearing house certificates, and let us get on a normal currency and check basis once again. Until that is done, we doubt if full confidence in the interior cities, especially in the Western country, where the disturbance is now perhaps greatest can be restored. In the meanwhile business is going on through its well worn channels, the stocks are so light in the hands of the merchants and dealers that almost daily replenishment is required. This keeps jobbers and dealers quite active.

It has been freely predicted that after the turn of the year and January 1 dividends will have been distributed, that the fresh investments coming in will steady or advance the market. As soon as we can confidently predict an improvement we realize that it is not far away.

There is, of course, the possibility of a bad quarter of an hour between this and January 1. While we hear of much retrenchment going on, and a reduction of working forces being made in the larger establishments, railroads, &c., the demand for labor in the cities seems unabated. We may be close to the change, but so far the columns of the newspapers are bulging with demands for all sorts of labor from wagon jumpers and bundle boys in the department stores up to skilled men in all branches.

We thought we in the interior were going to get some of the vast army of immigrants which came over from Europe, but we read in the New York papers that they are more than filling in the steerage on their way back. This is an adverse sign in itself and betrays the conviction that profitable employment on the seaboard at least cannot be so easily bad as heretofore. The profitability of farming, too, is turning many young men back in the country, who hitherto have now made their way to the cities. It may be we have been going too fast. We probably have, but with the vast industry of the American people it cannot be long until new substantial wealth overtakes that on paper. In the meanwhile we can cultivate assiduously our digestion for the outstanding securities.

Baltimore.

CARLIN & FULTON.—At the present time finance, of course, is the prevailing topic, and in every village many a man who never had a bank account nor owned a share of stock discusses the financial problems of the country and of the world with the same ability and readiness with which in a few months he will pass upon the merits of the Presidential candidates and their platforms.

To be sure, the present situation is brought forcibly to the attention of every one, whether he be capitalist, merchant, manufacturer or wage earner, through the financial columns of the daily press, the checks payable only through clearing houses, the scarcity and the premium upon currency; but what is needed most at the present time is rest from the agitation which is now largely hysterical and unnecessary with the millions of gold pouring into this country and with the mints working night and day converting it into coin; with the national banks taking out millions of additional circulation, and with the proposed new issue of Government bonds which will put millions upon millions of dollars into the banks throughout the country available for the legitimate uses of the trade. It is now time to get back to the regular methods of bona fide business, sympathizing, however, with those who have been through the bitter school of stock speculation and gambling.

We read of the shrinkage in values to the extent of billions, but what has been the shrinkage in the tangible assets of this country in its corn and wheat and cotton crops, its tobacco, and ores, and lumber, its coal, and in the varied products of its mines? The country never has been richer than it is to-day, and what is needed is the confidence of every one in the truth of the statements of the able and honest financiers of the country and of the Administration as to the needlessness for alarm on the part of capital.

One of our local banking houses in its weekly circular prophesies that "During the coming winter and spring money will doubtlessly pile up in financial centers, will accumulate in vast quantities, and with only relatively light demands from the commercial and industrial world, will be a drug on the market." The stock brokers are hoping, undoubtedly, that there will be a lessened demand from the commercial interests of the country in order that capital may get into the stock market again and furnish them with business, but they may be disappointed. The future prosperity of the country depends upon its industries, its agriculture, and not upon the business of the stock exchanges. The actual wants of this great nation, increasing every day, must be provided for, and while we consume much, we also produce more, and so business will undoubtedly continue.

There has been no doubt a hesitation on the part of many in regard to making large contracts for future delivery, thinking that possibly there may be reduction in costs, and assurances from the manufacturers upon that

question will greatly help the trade. The largest steel and iron producers in the world have announced positively that there will be no reductions in their products, and buyers can purchase for their future wants feeling safe in the stability of values as far as their products are concerned; and the prices of several other most important lines of goods for the coming season will not only show no reduction from last season's prices, but higher figures.

The situation in regard to manufactured goods is very different from that of manufactured stocks. There is no surplus of the former, no accumulation in the warehouses of either the retailer, the jobber, or the manufacturer. There has been no overproduction. The demand has been greater than the supply. Until these conditions change the dealer can purchase for the necessities of the consumer with every reason to believe that his assets will not depreciate upon his hands, and that the Hardware business will continue on the same conservative lines as heretofore.

New Orleans.

WOODWARD, WIGHT & Co.—The situation here is a little bit better than it was a week ago, and that was a little better than the week before. The crop is beginning to move slowly and painfully. Our banks here are importing some gold from New York. We are on a basis of fiat currency, in ones, twos, fives and tens, on the assets of the banks, for 66 2-3 cents on the dollar, and this is being taken readily in the city here, and in a great deal of the surrounding country.

In the next 10 days we will have a material improvement in this Gulf State section as a great deal of the cotton bills will then have been turned into money, and we will all then feel much happier about the crop also.

While we do not down here consider these present hard times as a Wall Street affliction, purely and simply, while we all know that we have got to contract very much and sell our automobiles, and get down to close living, yet we do not look for any very great amount of trouble in this section, as there has been very little expansion here, the South not yet having the credit facilities for expansion that the North and East have had, and perhaps the very fact of our backwardness in modern concentrated business activity, and our being close to the earth is going to be an advantage to us under present conditions.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—Conditions here have decidedly improved, and the outlook is good. Orders have all along been about normal and are now up to those of last November. Collections were reduced very considerably for about 10 days owing to the scarcity of currency necessary to move crops and other commodities. The grain movement was resumed more than a week ago and is growing active.

The methods provided for meeting the emergency are working well, and the stringency in currency is now disappearing. Collections are coming up satisfactorily. The Northwest is doing splendidly and expects to close the year in good shape.

Portland, Oregon.

FAILING, HAINES & McCALMAN.—Notwithstanding the financial stringency which is affecting us in common with all parts of the country, conditions in this territory are remarkably good. For something over two weeks now in this State we have had a holiday in order to protect the banks as they were unable to realize on their New York and Chicago deposits. During this holiday we in our line have continued doing business almost as if nothing had happened. Our business continues to be good and collections come in remarkably well.

In this city we have had one bank failure due to mismanagement, but this bank will probably pay out all right; at least, depositors are confident of it at present. One of our national banks is in the hands of the comptroller, after having paid nearly 50 per cent. of its deposits in three months. The balance of its deposits are amply secured by notes, but it has made no effort to col-

lect on its commercial paper, as it realizes that it would cause an enormous loss to the community at large; in fact, all the banks are taking this course and are not pressing their local debtors.

The big wheat firms, who on account of their inability to get gold have been unable to purchase their usual quantities of wheat, this morning resumed their buying. The lumber industry is very quiet, owing not so much to the financial stringency as to the recent change of rates on the part of the railroad and the uncertainty as to final action of the Interstate Commerce Commission. The Harriman lines have called off a large portion of their new work, owing to the financial trouble, but the Hill lines have continued their building down the North Bank, and have promised to do so until trains are running into Portland.

Considering everything, the condition of affairs in this section is amazingly prosperous, and there is a well-nigh universal feeling of confidence not only among the large business men, but also among the small dealers and others who would naturally lose their confidence in the present state of financial affairs.

Omaha.

LEE-GLASS-ANDRESEN HARDWARE COMPANY.—Trade conditions in the trans-Missouri region are normal and satisfactory. Farmers at this season as usual are very busily engaged husking corn, consequently there is a slight lull in trade for the time being.

Some money is naturally being hoarded, but will reappear just as soon as financial conditions in New York have settled themselves on a regular basis. There is any amount of grain and general products in this territory ready for shipment to the seaboard for Eastern use and export. The recent upset in the Eastern financial world is generally regarded simply as monetary.

There is no reason whatever for commercial stringency, nor will there be in this territory provided sufficient currency is brought into circulation to conduct its regular business in the regular way and relief in this special feature it is generally expected will soon appear and everything will then be running along again smoothly and satisfactorily. These conditions briefly represent the general feeling out this way.

Cleveland.

THE W. BINGHAM COMPANY.—The high tension at which business has been done for months past is letting up, and jobbers and retail merchants are more conservative in their purchases, but the legitimate demand for goods of all kinds keeps up well.

The shortage of currency is felt in some of the large cities. This is caused by the hoarding of money by individuals. If people would have more confidence and believe (as we all do) that it is the nimble or circulating dollar that promotes trade and traffic, money matters would soon shape themselves, so that prosperity and happiness would remain with us indefinitely, and we would all continue to live on "Easy Street." Haste to get rich quick by speculation is a curse on many of our people, because some do not know the game and therefore get pinched. Like the "shoemaker that sticks to his last," let the merchant, large and small, stick to the trades they know so well and understand, and all will be well with them.

Well assorted orders are coming to us from all sections we cover. The disposition among the country merchants seems to be to keep their stocks well assorted. Why should they not do so? Our farmers are prosperous, being blessed with abundant crops, which they are selling at good prices.

This is no time to cultivate pessimism. Let us all deal honestly with our fellow men, and do not try to retain all the profit; but remember the other fellow must make something, for a one-sided trade does not promote or enlarge business, but rather retards it. Let us have confidence in our banks, who have been our friends and helpers in times past, and are at present, for they are the best friends we can tie to in times like these.

Prices of general Hardware, mining, milling and manufacturers supplies are steady and firm, and there is no

desire to make any radical changes. The present prices and terms on Wood Screws have been reaffirmed for next season. The prices on Nails and Wire remain the same.

Merchants who watch their stocks and keep them well assorted, and do not try to overbuy or speculate, will be winners in the end. Let us buy so we can pay our bills promptly when due, or take advantage of the 2 per cent cash discount in 10 days from date of invoice. This can be accomplished if we keep our money working in our own legitimate business.

At present prices many kinds of spring goods, such as Garden Tools, Hoes, Forks and Rakes, Scythes, Shovels, Spades, Scoops, Step Ladders, Freezers, Conductor Pipe and Eave Trough, Manila and Sisal Rope, are a good purchase. Most of these are short season goods, and only those who get their orders in in advance will be served promptly before the season opens. Many jobbers contract ahead on these goods so as to accommodate their retail merchants. Put in your orders now.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—Must give you a telegraphic report this time.

The bankers' panic has traveled West. The thing that strikes us most forcibly is the patience and cheerfulness of the people under present conditions in exchanging clearin-house checks instead of currency. There is actually a humorous side even to this situation. The bankers have been frightened stiff. We hope by degrees they will limber up. This will go down in history as the bankers' panic.

Business of course has fallen off and collections have followed suit, but under present conditions we are really surprised that there is as much business and that there is as much money being collected. We have instructed our salesmen to continue traveling as usual. We have told them if they cannot take long orders to take short ones, and if they cannot take short ones then at least to look pleasant.

CONTENTS.

	PAGE.
The Snurr & Kamen Automatic Wire Crimper. Illus....	1447
The Baush Universal Joint. Illustrated.....	1448
The New Hendey 20-In. Shaper. Illustrated.....	1449
The Oil City Gas Engine Starter. Illustrated.....	1450
Recent Customs Decisions.....	1451
The Duplex Steel Making Process. Illustrated.....	1452
Another Manufacturer of Large Gas Engines.....	1454
The World's Petroleum Production.....	1454
A New Ferracute Redrawing Press. Illustrated.....	1455
The Steel Corporation's Stock Exchange Statement.....	1455
The Excelsior Friction Driven 15-In. Drill. Illustrated..	1456
Milliken Brothers, Ltd., Doing a Good Business.....	1456
New Drill Sockets and Lathe Dogs. Illustrated.....	1457
The National Founders' Association.....	1458
A New Lucas Power Pump. Illustrated.....	1464
The Hoefer No. 8 Pipe Die Stock.....	1464
The Obermayer Portable Core Oven. Illustrated.....	1465
The Frick-Hostetter Coke Purchase.....	1465
The Lunkenheimer Improved Sand Blast Nozzle. Illus....	1465
Rust Prevention.—I.....	1466
British and American Coal Production.....	1470
The Wharton Steel Company.....	1470
French Treaty Prospects.....	1471
Graphite Paint in Increasing Use.....	1471
Editorial:	
The Work of Employers' Associations.....	1472
Maintaining Machinery Prices.....	1472
Open Hearth Steel in Great Britain.....	1473
A Test of Battleship Repair Shops.....	1474
Correspondence	1474
Personal	1475
Obituary	1475
The Westinghouse Machine Company.....	1475
Ore Prices Being Discussed.....	1476
The Ohio Valley Improvement Convention.....	1477
A Factory Heating and Ventilating Equipment.....	1478
News of the Works:	
Iron and Steel.....	1478
General Machinery.....	1478
Power Plant Equipment.....	1478
Foundries	1479
Bridges and Buildings.....	1479
Fires	1479
Hardware	1479
Miscellaneous	1479
Labor Notes.....	1479
The Average Demurrage Question.....	1480
The Iron and Metal Trades:	
A Comparison of Prices.....	1481
Chicago	1481
Pittsburgh	1483
Cleveland	1485
San Francisco.....	1486
Birmingham	1486
Cincinnati	1487
Philadelphia	1488
Metal Market.....	1489
New York.....	1489
Iron and Industrial Stocks.....	1490
The Lackawanna Steel Company Temporarily Shuts Down a Portion of Plant.....	1490
The Leather Belting Manufacturers' Association.....	1490
Canadian Iron Development.....	1491
Trade Publications.....	1491
The Machinery Trade:	
New York Machinery Market.....	1492
Chicago Machinery Market.....	1492
Cincinnati Machinery Market.....	1493
Philadelphia Machinery Market.....	1494
Cleveland Machinery Market.....	1495
New England Machinery Market.....	1496
Government Purchases.....	1497
Hardware:	
Condition of Trade.....	1498
Notes on Prices.....	1503
Holiday Trade in the Hardware Store. Illustrated..	1505
An Open Shop.....	1507
Next Year's Retail Hardware Conventions.....	1507
Requests for Catalogues, &c.....	1508
Price-Lists, Circulars, &c.....	1508
Foreign Commerce and Its Development.....	1509
Building Up Export Trade for the Small Manufacturer	1510
The Diamond Lawn Edger and Trimmer. Illustrated.	1512
Patternmakers' Hammer. Illustrated.....	1512
The Richards Self-Locking Pin Clevis. Illustrated..	1512
Smokeless and Odorless Kitchen Utensils. Illustrated	1512
The Ideal Tank. Illustrated.....	1513
"Nice" Skate Rolls. Illustrated.....	1513
The Reliable Jack and Compound Tire Pump. Illus..	1513
Gaston Pitless Wagon Scale. Illustrated.....	1514
Cement Workers' Tools. Illustrated.....	1514
The Ellis Gate. Illustrated.....	1515
Bosley's Air Stops. Illustrated.....	1515
Current Hardware Prices.....	1516

the greatest relief that the retail merchants can have, which will in turn affect the jobbers and every one else.

We look for a good spring trade throughout the South, and hope that everything will resume its normal conditions at least by January 1.

NOTES ON PRICES.

Wire Nails.—There is little reason to doubt that the trade throughout the country are without heavy stocks of Nails, but the volume of business is moderate on account of the indisposition to purchase in large lots at the present time. Purchases by the retail merchants are more frequent than from the jobbers, there being less disturbance with retail business than in the larger transactions of wholesale houses. It is gratifying to note that there has been an evident improvement in the demand within the past week or 10 days, indicating the return of confidence throughout the trade. The steadiness with which prices are maintained by the mills is a good feature of the situation and indicates the carrying out of the conservative policy which the leading manufacturers are advocating. Some of the jobbers are not unnaturally offering concessions in price, with a view to effecting sales, and thus realizing on goods in stock. Quotations on base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$2.05
Carload lots, to retail merchants.....	2.10

New York.—Some of the local Nail houses regard business as normal, considering present conditions, while others are of the opinion that there has been somewhat of a falling off in requirements, as compared with last month. Car load orders from retail merchants have almost ceased and purchases are confined to orders for small lots, repeated as requirements demand. Local jobbers and Nail houses are holding small lots at store at \$2.35, base, and in general this price is fairly well maintained.

Chicago.—Considering the heavy restraint laid upon trade by the checked movement of crops, held up for lack of currency payment, orders have not been curtailed as sharply as might have been expected. Business has, of course, been somewhat retarded, but has not suffered as have other lines. New orders are not developing quite as strongly as heretofore, but shipments on existing contracts continue heavy. Quotations are as follows: \$2.23 in car lots to jobbers, and \$2.28 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—Most large consumers of Wire Nails covered their requirements for some time ahead before the last advance in prices from \$2 to \$2.05 a keg, and demand now is mostly from retailers for carloads and small lots. Wire Nail mills report that specifications against contracts made some time ago by jobbers are coming in fairly well, but in some cases jobbers have asked that shipments be suspended temporarily until conditions have cleared up. However, when the general situation is taken into account, the present condition of the Wire Nail trade is regarded as highly satisfactory by the mills, shipments being fairly heavy and collections reported as very satisfactory. Prices are being absolutely maintained by the mills, but some jobbers who have become scared are shading prices to retailers about 5 cents a keg, but this does not cut any serious figure in the general market. Stocks of Wire Nails all over the country are light, and when orders come in they are usually accompanied with a request for prompt treatment. Quotations on base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$2.05
Carload lots, to retail merchants.....	2.10

Cut Nails.—There is the absence of a liberal movement in Cut Nails, transactions being limited almost exclusively to comparatively small lots. In the matter of price the market shows little change, there being some, but not serious, irregularity in current quotations.

Some unevenness in price is ascribed to the marketing of Nails of inferior quality at figures which the manufacturers of regular goods refuse to meet. The market continues to be represented by the quotation of \$2.05 to \$2.10, with freight added, but this figure is sometimes slightly shaded.

New York.—A moderate demand exists in this market for Cut Nails. Quotations for small lots at store range from \$2.30 to \$2.35, base, the former price being more or less general.

Chicago.—The local demand continues quiet, though reports as to the stability of jobbing prices agree. The mills are relying mainly on specifications on contracts, as not much new business is coming in. Chicago quotations are as follows: Iron Cut Nails, carloads, to Jobbers, \$2.38; to retailers, \$2.43; Steel, to jobbers, in carloads, \$2.28; to retailers, \$2.33.

Pittsburgh.—The volume of new business is light, and on the other hand, the mills are not trying to force business by naming lower prices. Contracts are pretty well cleaned up, and some of the Cut Nail mills have slowed down in operations until demand improves. We quote Steel Cut Nails at \$2 to \$2.05, f.o.b. Pittsburgh, for carload lots, and small lots at \$2.10, to which freight to destination is added. Iron Cut Nails are being held at about \$2.15, at mill.

Barb Wire.—At the present time there is comparatively little doing in the purchase of Barb Wire, most of the shipments being in execution of orders placed some time ago. The manufacturers, however, are expecting a good business in the spring, and with the somewhat diminished production, which is going on at present, it is suggested that there is the possibility of a shortage during the coming season. Notwithstanding the comparatively small demand at this time the manufacturers with substantial unanimity are upholding prices, and the market is thus characterized by an excellent tone. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.20	\$2.50
Retailers, carload lots.....	2.25	2.55
Retailers, less than carload lots.....	2.35	2.65

Chicago.—The season is practically over for the placing of new business, but shipments against contracts continue in fair volume. It is expected that orders from the Southwest will begin coming in soon to meet the earlier demand of that section for the coming season. We quote as follows: Jobbers, Chicago, car lots, Painted, \$2.38; Galvanized, \$2.68; to retailers, car lots, Painted, \$2.43; Galvanized, \$2.73; retailers, less than car lots, Painted, \$2.55; Galvanized, \$2.85; Staples, Bright, in car lots, \$2.35; Galvanized, \$2.65; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—There is practically no new demand for Barb Wire, but there are still some contracts unfilled against which specifications are coming in at a fairly satisfactory rate. In the absence of new business we are advised that prices are being absolutely maintained by the mills. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.20	\$2.50
Retailers, carload lots.....	2.25	2.55
Retailers, less than carload lots.....	2.35	2.65

Smooth Fence Wire.—The demand for Smooth Fence Wire is at present quite limited in view of the fact that Woven Wire Fence manufacturers are reluctant to purchase material for Fence which will not be marketed until spring, especially in view of the fact that it is an expensive matter to carry a stock of material or finished Fencing through the winter. There appears, however, to be a confident feeling that the demand for Fencing in the spring will be good and the mills are anticipating soon to receive the deferred orders for Wire. Quotations continue as before, f.o.b. Pittsburgh, 60 days or 2 per cent. for cash in 10 days:

Jobbers, carload lots.....	\$1.90
Retailers, carload lots.....	1.95

but the differential between the two classes of trade is not always strictly adhered to.

Chicago.—Though affected to some extent by the unfavorable money conditions, the movement continues in a volume that, under the circumstances, is regarded as wholly satisfactory. Forward contract business does not, of course, develop quite so freely, as consumers are exercising considerable caution in making forward commitments. When the scarcity of money is relieved it is believed that the demand will be renewed with unabated vigor. Quotations are as follows: In car lots, to jobbers, \$2.08, f.o.b. Chicago, and to retailers, \$2.15.

Pittsburgh.—Demand for Fence Wire continues fairly active, but is not as heavy as some time ago, most of the large buyers having covered themselves by contracts prior to the last advance in prices, and are now specifying quite freely against these contracts. We are advised that prices are being absolutely maintained by the mills, and that shipments are fairly heavy, with a large volume of business still on the books. Quotations for base numbers 6 to 9 are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.90
Retailers, carloads.....	1.95

Wire Cloth, Hardware Grade.—A heavy decline amounting to 90 cents per 100 sq. ft. has been decided on by leading manufacturers of Hardware Grade Cloth, the occasion being the alleged disturbance of the market by outside competition. Following is the new schedule of prices:

	Per 100 sq. ft.
2, 2½ and 3 mesh.....	\$2.50
4 and 5 mesh.....	2.75
6 mesh.....	3.00
8 mesh.....	3.50

Painted Screen Cloth.—The price on Painted Wire Screen Cloth has been fixed this week at \$1.30 per 100 sq. ft. to the retail trade. It represents a decline of 5 cents per square foot from the corresponding price at the close of the season, but an advance of 5 cents over the opening quotation a year ago. As was the case last year, quotations are for specified orders only, to be shipped prior to February 1. On shipments from factory to points east of the Mississippi River freight is allowed up to 35 cents per 100 lb. To points west of the Mississippi freight is added, according to destination. Following is the manufacturers' established schedule of prices to the retail trade on the entire Screen Cloth line:

	Per 100 sq. ft.
Painted, 12 mesh.....	\$1.30
14 mesh.....	1.90
16 mesh.....	2.25
Galvanized, 12 mesh.....	1.85
14 mesh.....	2.20
16 mesh.....	2.55
Bronze, 14 mesh.....	7.00

Readers of *The Iron Age* are aware that market conditions in this line are rather different than ever before, owing to the organization of the American Sales Company, Chicago, which will dispose of the entire output of this commodity of a number of mills. It should also be remembered that quotations are for Black Cloth only, the manufacturers having agreed to discontinue the production of the Green variety, at least as a regular line.

Bolts and Nuts.—Many leading manufacturers have reaffirmed their prices. Some falling off in business as a result of current financial conditions is, of course, admitted, but as it is recognized that a moderate reduction in prices would have little or no effect in stimulating buying it is apparently believed to be the wisest course to meet the situation by curtailing production.

Leather Belting.—The annual convention of manufacturers of Leather Belting is now in session in this city. There is a full attendance. It is not expected that anything of general interest will transpire or that there will be any change in the situation, broadly viewed. Hides are weaker at present and it may be expected that manufacturers will give their customers the benefit of any reduction in the cost of production.

Poultry Netting.—As usual, prices on Poultry Netting have been established coincidently with those on Wire Cloth and are subject to much the same terms and

conditions. A decline of 5 per cent. is shown over last year's figures. The market may be represented by a discount on Netting, galvanized before weaving, of 80 and 10 per cent., and on galvanized after weaving of 80 and 5 per cent.

Sash Cord.—The market for Sash Cord continues somewhat irregular, prices currently reported being lower than for a long period. Some manufacturers are quoting a base price from 1 to 2 cents lower than recently prevailing beyond which further concessions are not infrequently made to induce orders in the face of competition. There is an insistent rumor that hopes are still entertained of a return of the harmony which formerly existed among the manufacturers and establishing this line upon a more stable basis. The present market may be represented in a general way by a quotation of 23 to 23½ cents per pound base.

Rope.—Most manufacturers refer to business as quiet, and accordingly the market is somewhat irregular at the following prices: Pure Manila, 11½ to 12½ cents; B quality grades down to 9 to 9½ cents; Pure Sisal, 9 cents; lower grades Sisal, 7½ to 7¾ cents; No. 1 Jute, ¼ in. and up, 8 to 8½ cents; No. 2 Jute, 7½ to 8 cents. According to press reports from the State of Yucatan, Mexico, a stock company is to be formed, known as the Corporation Association of Sisal Hemp Planters, incorporated for five years, with unlimited capital, varying according to the number of active members. The stated object of the association is to advance the producers money on their crops, which are to be held by the association, which will control the selling price. Thus large and small consumers will be required to pay for their supplies whatever price the planters may ask. Cheaper grades of fiber, such as Iistle and Jute, may help to keep Sisal prices somewhat within reason, as these fibers can be used as substitutes for Sisal, though inferior to Sisal for some purposes.

Linseed Oil.—There have been no special developments in the Oil market this week, and limited demand for small lots have been the rule. The market generally is steady at this point, except perhaps where holders of Oil are in need of cash. Neither crushers nor consuming manufacturers are anxious to enter into contracts for future delivery. At this point State and Western Raw, in 5-bbl. lots, is quoted at 45 cents and City Raw at 47 cents per gallon. Boiled Oil is 1 cent advance on Raw Oil. Calcutta Raw is reduced in price 1 cent, or 69 cents per gallon.

Spirits Turpentine.—Much to the surprise of the trade, Turpentine has advanced 4 cents per gallon during the week. Some foreign demand developed at Savannah, but not in sufficient volume to account for the rapid advance in prices, which are viewed with some feeling of suspicion by the local trade. The New York market is represented by the following quotations, according to quantity: Oil Barrels, 51½ to 52 cents; Machine Made Barrels, 52 to 52½ cents.

Window Glass.—Little has occurred during the week in Window Glass circles except the starting of additional plants by those outside of the Window Glass Manufacturers' Protective Association. It is estimated that about a quarter of the total capacity of hand blown Glass in this country is now in operation, either at special or secret wage agreements, or at the Amalgamated Association's 12½ per cent. reduction on the wage scale of last fire. Some factories are being operated by two sets of workmen, each set working half time. This plan relieves the association from providing for the needs of so many idle workmen. It is understood that some factories are offering Glass at figures which are supposed to represent a loss of 10 to 15 per cent. on the cost of manufacture. A light demand is noted in most localities, as jobbers are generally buying no more than is required for actual needs. Demand is light at this point, and prices more or less weak at prevailing quotations. Prices recommended by New York jobbers are as follows: Single strength 90 and 10 per cent. discount, double strength 90 and 20 per cent. discount. These discounts apply to purchases up to 50 boxes. Over 50 boxes the prices are 5 per cent. better.

Holiday Trade in The Hardware Store.

Third Article.

HARDWARE STORE FOR PRACTICAL GIFTS.

THE BARRETT HARDWARE COMPANY, Joliet, Ill., has for six or seven years past made a practice of issuing a Christmas booklet. The company regards this as an effective form of advertising, and believes that almost any hardware merchant can get out some kind of a booklet which will be found a stimulation to his business. The company's booklet for 1906 was entitled "Christmas Suggestions, 1906." The pictorial part of the front cover and an inscription which appeared on the back are reproduced herewith. The booklet was 9 x 4 in. in size, attractively printed in two colors, green and black, the illustrations being in the former color and appearing in connection with and forming a background for the text in black.

The Barrett Company remarks that not being in the Toy business, the effort is made to advertise practical gifts. It is believed "that a good hardware store offers more opportunity for practical gifts to tired out women and others than almost any other line." Carrying out this idea the company last year featured such lines as the following: Nickel Plated Ware, Shears and Scissors, Tool Chests, Pocket Cutlery, Carvers, Razors, Steel Ware, Food Choppers, Wagons and Sleds, Bread Makers, Percolators, Ranges, Roasters, Washing Machines, Clothes Wringers, Carpet Sweepers, Skates, &c. The Christmas trade which resulted from the company's publicity efforts was very gratifying.

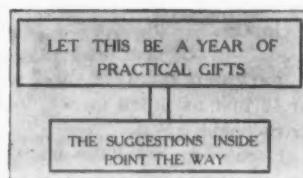
EXTENSIVE LINE OF AN ILLINOIS HOUSE.

THE Churchill Hardware Company, Galesburg, Ill., has pushed the sale of holiday goods to such an extent that December is now one of the very best business months in the entire year with this house. In carrying on the Christmas campaign a good deal of space is occupied in the local papers. A portion of one of last year's more conspicuous announcements is reproduced herewith. This advertisement occupied an entire page, and made a very effective appearance. The portion shown herewith with rule around was centered on the page, leaving a considerable margin for the accommodation of electrotypes representing selections from the "Christmas Suggestions," to which reference was made. Among the goods thus shown were Carvers, Tool Chests, Watches, Meat Choppers, Skates, Lamps, Sleds, Postal Scales, Thermometers, Bread Makers, Razors, Scissors, Roasters, &c.

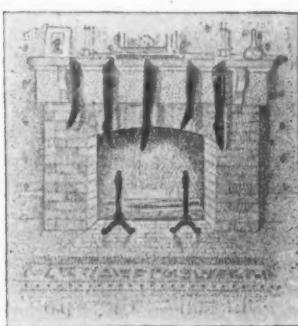
Last Year's Line.

Referring to the programme followed last year, which it will be observed, was a pretentious one, the company writes as follows:

We have each year for the past four or five years added new lines of goods specially for the Christmas



Inscription on Back Cover.



Pictorial Part of Front Cover of Barrett's Booklet.

was 9 x 4 in. in size, attractively printed in two colors, green and black, the illustrations being in the former color and appearing in connection with and forming a background for the text in black.

trade. Last year we put in four new floor show cases in addition to the 10 floor cases we had before.

We put in a large line of Plated Goods, as large as any jewelry house in the city carries.

We added a large stock of Brass and Bronze Goods, such as Smoking Sets, Library Sets, Inkstands, Paper Weights, Twine Holders, and other fancy articles in Brass and Bronze Goods.

We put in a very large stock of Sewing Sets, Scissor Sets, a much larger line than has ever been carried before

Christmas Suggestions

From Our Stock

CARPET SWEEPERS	TRICYCLES	NICKELED TRAYS
Fine Pearl Handled KNIVES for the ladies	BOY'S AUTOS	CRUMB TRAYS
Pearl and Stag Handle KNIVES for the gentlemen	CHILDREN'S HAND CARS	BREAD TRAYS
JACK KNIVES for the boys	SLEDS	ALCOHOL FLAGONS
CHAIN POCKET KNIVES for the children	TOOL CHESTS	CUPIDORS
NAIL CLIPPERS	SILVER KNIVES and FORKS	SKATES
MANICURE SETS	SILVER TEA and TABLE SPOONS	ONE-ARM MAN KNIVES
NAIL FILES	SILVER SOUP and BOUL-LION SPOONS	FLASH LIGHTS
ORANGEWOOD STICKS for nails	OYSTER FORKS	CONKLIN SELF FILLING
MANICURE SCISSORS	BUTTER SPREADERS	FOUNTAIN PENS
NAIL SCISSORS	SALAD SETS	HOT AIR ENGINES
NAIL POWDER AND PASTE	MEAT FORKS	FINE BRASS GOODS
EMBROIDERY SCISSORS	COFFEE MACHINES	SMOKING SETS
FANCY SCISSORS	COFFEE PERCOLATORS	ASH TRAYS
GILLETTE AND STAR SAFETY RAZORS	CHAFING DISHES	MOORE'S PUSH PINS
CORN RAZORS	BAKING DISHES	BRASS INK STANDS
SILVING SOAP	Nickel and Aluminum TEA and COFFEE POTS	ALARM CLOCKS
SHAVING CUPS	INVERTED GAS LIGHTS	THERMOMETERS
RAZOR SETS	DROP GAS LIGHTS	CHILD'S SETS
TIERS	INGERSOLL WATCHES	FOLDING POCKET SCISSORS
FINE LIBRARY SETS OF SCISSORS	STARRETT'S TOOLS	MAGNETS
LETTER OPENERS	MAJESTIC RANGES	SCROLL SAWS
ELECTRIC TOY ENGINES	DOG COLLARS	DRAWING INSTRUMENT SETS
Nickel Plated BATH ROOM FIXTURES	ROASTING PANS	BICYCLES
IRON AND STEEL WAGONS	BREAD AND CAKE MIXERS	FAMILY SCALES
	FOOD CHOPPERS	BREAD KNIVES
	FINE CARVERS	COBBLER'S OUTFITS
	CARVING SHEARS	AND HUNDREDS OF OTHER USEFUL ARTICLES

We Never Sleep

Churchill Hardware Company.

Central Portion of a Page Advertisement of Churchill Hardware Company, the Margin All Around Being Occupied with Illustrations of Holiday Goods.

in this city, as well as a large line of Chafing Dishes, Coffee Machines, Alcohol Flagons, Nickel Plated Goods of all kinds, including Glass Shelves and Towel Racks, &c., for the bathroom.

We also added a large and complete assortment of Manicure Goods, including the Shears, Sandpaper, Orange Wood Sticks, Nail Powder and Paste, &c.; a line of Gas Drop Lights; a line of Watches, Fountain Pens, Flashlights, Hot Air and Electric Toy Engines, &c.

We have increased our Christmas trade very materially each year for a number of years past, and we now look upon December as one of the very best months of the entire year.

We will add further to the assortment and variety for the coming holiday season.

LETTERS FROM HARDWARE MERCHANTS.

We give below extracts from further letters from representative Hardware merchants, in which their experience and success in going after holiday business is described:

Women's Trade Especially Catered To.

FROM A MERCHANT IN NEW YORK STATE: Local conditions have much to do with Christmas trade. We are located near a large city, with all of its attractions such as "bargains," "bargain sales," "special sales," &c., so about two months before Xmas we commence to run special Friday and Saturday bargains to attract customers to our store. We advertise them extensively in the newspapers, and best of all by an attractive window display of the goods, and we make low prices **Special Sales.** and give real bargains. No humbugging for us; we believe in honest, square dealing. One week we hold a 30-cent sale, perhaps the next week a 10-cent sale or a 40-cent sale, and so on, giving each week a good variety of articles to choose from, for you cannot interest every woman in a Berlin Kettle this week; she may need a Dishpan or a Coffee Mill or a Wash Basin or something else. This excitement, for such it proves to be after a few weeks, we keep up until 10 days before Xmas, when we make our display and decorations for Xmas. Since the holidays we have taken it up again, the results having been very satisfactory, and this is the moral of my story.

If they see or hear of something out of the ordinary they go to see it (just what we want them to do). They come in, look around; if they are not particularly interested in any of the articles in the sale, **Women Like to Shop.** we show them a nice piece of Nickel or Aluminum Ware, some regular goods or perhaps some novelties, such as Leather Goods; or they may be interested in a Coffee Percolator, a Bread Mixer, a Food Chopper or something else.

We invite them to come next week, and tell them these Friday and Saturday bargains will continue, and each week there will be something different. She goes away very much pleased with the attention she received, and says in her mind "That is a nice place to trade; I must go next week and see what they have, for those were good bargains they offered to-day." We have accomplished two things:

1. *Pleased the customer and offered her some good values.*
2. *We have secured another customer, for she will surely come again.*

By pursuing the above course we sold a large amount of regular goods for Xmas presents, which were marked and laid away upstairs to be delivered the day before Xmas, which required an extra team that day to deliver, to say nothing of the goods sold at the bargain sales. These sales have brought a great many new customers to our store, and they come regularly every week to look around, and seldom, if ever, go away without buying something. Real bargains are a good thing for any store, but fake bargains will hurt a store for years to come. **Have Real Bargains.** If you try to fool the people you will eventually fool yourself. We keep adding new lines from time to time, the last, just before the holidays, was Leather Goods, and while our sales were not large on them, it gave us one more string to pull on and another line to talk about and help draw trade to our store. Finally, keep up to date. Better **Keep Up to Date.** be a little ahead than to be behind. Add new lines and keep all the old lines. Keep your store clean and cheerful, a fit place for any lady to enter. Get out of that rut of doing things just as your father and grandfather did. Change things around some once in a while; it will have a good effect on your customers.

A Notable Christmas Business.

FROM A MERCHANT IN PENNSYLVANIA: The opportunities of the present day Hardware merchant, for special holiday business, we believe to be unlimited. This, we have found to be true in our own case. **Unlimited Opportunities.** About six or seven years ago we began before the holidays to show more prominently articles in our line, suitable for useful holiday gifts, such as Aluminum Ware,

high grade Nickel Plated Ware, better grades of Cutlery and Carving Sets, Carpet Sweepers, &c. The results proved very gratifying each year, showing a large increase in the business.

About two and a half years ago we opened our China and House Furnishing Goods department, and in this department we carry each year a complete line of Toys and Holiday Gifts of every description, which has increased the business to such an extent that during

Results Felt All the Year. the holidays just passed we experienced the largest retail business in our history. The results of this we feel all the year around, as it brings people to our store, and while their purchase on the first visit may be only nominal, they see many things of every day necessity which they return and purchase at future times.

Our policy has always been to sell the best article we can for a certain price rather than the cheapest, have a good variety for selection, change our **Price Most Important.** window displays and newspaper advertisements frequently, but most important is to have the price right.

In conclusion, to demonstrate how this department has grown, would say that prior to adding **Extra Clerks.** Holiday Goods to our line we never employed any extra help before Christmas, while during the last holidays we had over 40 extra sales people, and the entire line sold was very profitable.

Six Years' Experience.

FROM A MERCHANT IN NEW YORK STATE: We began exploiting Christmas trade six years ago, and as our first effort showed some results we felt **Encouraged to Go On.** encouraged to go on with it year after year. We made extra efforts, both last year and this, and the showing has been so good that now we shall look forward to it and plan for it just as much as we do for spring business or fall Stove trade.

Heretofore we have begun forming trade about December 1, but we are of the opinion that it would be a good idea to begin just before Thanksgiving, **An Early Start.** use extra newspaper space and change the show windows two or three times, each time making a good display of holiday goods. In our advertisements we have always made much of the idea of practical Christmas presents. A great many during the excitement of holiday shipping **Practical Presents.** buy a great many useless things, and some of them are going to feel sore about it after the excitement is over. Useful presents leave a more comfortable feeling. It is undoubtedly true that many who have been extravagant one year go to the opposite extreme the next. It may seem like philosophizing pretty deep, but it stands to reason that a customer who does not associate **Protecting Customers.** us with any wasteful expenditures will not be inclined to pass us by the next time he feels Christmas money burning in his pocket.

We always give especial attention to our window display. This year we built a large pipe organ out of Hardware, such as we carry in stock. There **Window Displays.** were panels in each side of the window to the height of 7 ft., on which were displayed Cutlery, Silverware, &c. On the floor of the show window were arranged other things in Hardware which are salable at this season, such as Skates, Nickel-ware, &c. We used holly and running pine liberally to give the whole a holiday effect. This window attracted much attention, and seemed to bring more results than our ads. in the newspapers. We did not stop with the windows, but arranged and decorated the whole main floor of the store in a way to call attention to every line of Hardware that we carry that would be at all desirable for presents. We buy no specials for holiday trade. What we sell at this time is salable all the year. If a Hardware dealer thinks there is little in his line that is really desirable at this sea-

Whole Store Decorated. tention to every line of Hardware that we carry that would be at all desirable for presents. We buy no specials for holiday trade. What we sell at this time is salable all the year. If a Hardware dealer thinks there is little in his line that is really desirable at this sea-

son, let him look his stock over and he will soon begin to sit up and take notice. There are Skates, Sleds, Pocket Cutlery, Sporting Goods, Table

Hardware Line Sufficient. Cutlery, Silverware of all kinds, Tool Sets, Chafing Dishes, Serving Dishes,

Five o'Clock Teas and most everything else in Nickelware, Carpet Sweepers, Lamps, Percolators, Food Choppers, Bread and Cake Mixers, Scissors, Shaving Sets and Watches. This is just a suggestion. Any merchant could look through his store and add dozens of items to this list. We find there is a great deal of work in a sale of this kind; we found

The Hard Work Pays. that we were harder worked, all things considered, than at any other season of the year, but it has paid, for it brought us a great deal of trade that we would not otherwise have had.

AN OPEN SHOP.

FROM a prominent Hardware manufacturer we have received copy of the poem reproduced below. It appeared in a recent issue of a Western local paper and under head as above:

The labor unions of Chicago have purchased a cemetery where only the members of the union may be buried.—*News Item.*

*All his life in a union shop
He earned his daily bread;
They buried him in a union grave,
When the union man was dead.*

*He had a union doctor,
And he had a union nurse;
He had a union coffin,
And he had a union hearse.*

*They put him in a union grave,
When he was good and dead;
They put up a union monument
Just above his head.*

*And then he went to heaven,
But to stay he didn't care;
He kicked because he said that some
Nonunion men were there.*

*He then went down to the other place,
And there produced his card;
Then Satan threw an earnest face
And studied good and hard.*

*And then he laughed, his hands did rub
Till he thought he'd never stop;
"Lord bless your soul," said Beelzebub,
"Why, this is an open shop."*

THE Bureau of Promotion and Development of the Paint Manufacturers' Association of the United States, P. O. Box 282, Chicago, is sending out a circular entitled "Another Opportunity to Increase Your Paint Sales," in which reference is made to styles in painting for 1908. The Bureau has recently held a number of conferences with a committee composed of several of the leading master painters of the country at which the subject of the most suitable combinations, both as to appearance and permanency, were thoroughly discussed. As an outcome of these deliberations several color schemes or combinations best suited to different styles of architecture have been selected and will be exploited by the association through its bureau as the proper styles in painting for 1908. With the December monthly letter the Bureau will forward color schemes of one or two of the combinations, and will arrange to have the entire series in the hands of merchants by March first. It is suggested that this will give Paint handlers a good opportunity of talking up styles in painting with customers in advance of the spring painting season.

NEXT YEAR'S RETAIL HARDWARE CONVENTIONS.

Minnesota.

THE Minnesota Retail Hardware Association, which meets at St. Paul, February 25-28, 1908, has secured the new Auditorium for the exhibition of goods by merchants and manufacturers. Last year these exhibits were held in the rooms and corridors of the hotel, and on account of limited space and excessive charges the arrangement was not wholly satisfactory. Ample room is afforded in the Auditorium, and it is expected that because of the better facilities for display the exhibits at the coming convention will exceed both in number and extent those of any former meeting. The available space has been plotted in blocks and numbered, and sheets containing a diagram of the Auditorium floor and galleries, with a list of prices for the different space locations are being mailed to exhibitors by M. S. Mathews, Boston Block, Minneapolis, Secretary of the Association. Accompanying the diagram is a space contract in duplicate, together with printed conditions, which will govern the management of the exhibition. This is regarded as Minnesota's first annual Hardware exposition, and the association will endeavor to make it an unqualified success, in which they will doubtless have the hearty co-operation of the manufacturing and jobbing trade.

Connecticut.

The directors and Advisory Committee of the Connecticut Hardware Association met at Hotel Garde, Hartford, November 4, and decided to hold the next annual meeting at Meriden, on the second Monday and Tuesday of February. It was voted to make no feature of manufacturers' exhibits, as the meetings of the association will be closed sessions.

Indiana.

The Indiana Retail Hardware Association's annual meeting will be held on February 18-20 at Indianapolis. A Hardware exhibition will be a feature of the gathering, conducted on about the same lines as last February. The exhibits will occupy spaces in a separate hall from the convention proper, the forenoons and evenings being given over to an inspection of the displays and the afternoons to the convention proceedings. Tomlinson Hall has been engaged for exhibition purposes. M. L. Corey, Argos, secretary of the association, reports that since the last meeting more than 125 names have been added to the membership, and the prospects point to an even more useful and enthusiastic convention next year than the last, which was the best in the history of the organization.

Pacific States.

As already announced, the annual convention of the Inland Empire Implement and Hardware Dealers' Association, E. W. Evenson, secretary, Spokane, Wash., will be held in Spokane, January 15-17. It has been decided not to make Hardware exhibits by manufacturers and Jobbers a feature of the convention, as the officers of the association are of the opinion that the exhibits would occupy too large a proportion of the time of the members and would lessen interest in the proceedings of the different sessions.

The Idaho Association will meet one week previously at Boise, Idaho, while the Oregon Association will convene the week following on January 21 and 22, in the newly finished rooms of the Portland Chamber of Commerce, Portland.

At the close of the Oregon convention the first annual meeting of the Pacific Federation of Retail Hardware and Implement Associations, which was organized a few months since, will be held—January 23, 24 and 25. Assurances have been received which point to a large and successful meeting with a representative attendance from all States west of the Rocky Mountains. This gathering will also take place in the Portland Chamber of Commerce rooms.

REQUESTS FOR CATALOGUES, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM DAVIS & CRAWFORD, Clay Center, Neb., who carry Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting and Athletic Goods.

FROM NORMAL HARDWARE COMPANY, Frank Lander, proprietor, who will engage in business in Normal, Ill., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Sporting and Athletic Goods.

FROM H. H. HARDIN, who has put in a stock in Eastland, Texas, and will do a wholesale and retail business in Shelf and Heavy Hardware, Agricultural Implements, Paints and Oils.

FROM THE FOURTEENTH AVENUE HARDWARE & HOUSE-FURNISHING STORE, 1303 Fourteenth avenue, Rockford, Ill., C. O. Nelson, manager, handling Hardware, Stoves, Tinware, House Furnishing Goods, &c.

FROM THE ROMEO HARDWARE & IMPLEMENT COMPANY, Romeo, Mich., which has been incorporated with a capital stock of \$15,000, handling Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints and Oils.

FROM TURNER & SCHWARZENBERG, 398-400 Broadway, Lawrence, Mass., who have leased the building at 523 Essex street, and will maintain their old store in conjunction with the new one. A wholesale and retail business is carried on in Shelf and Heavy Hardware, Agricultural Implements, Paints, Oils, Gas Fixtures, Gas Engines, Electrical Goods, &c. The new building will be fitted throughout with first-class fixtures.

FROM ARMSTRONG-BROOKS HARDWARE COMPANY, which has been incorporated in Norfolk, Va., with capital stock of \$5000, to carry on a wholesale and retail business in Shelf and Heavy Hardware, Stoves, Tinware, Paints, Oils and Window Glass.

THE NEW HAVEN MACHINE SCREW COMPANY, Mill street and Saltonstall avenue, New Haven, Conn., has largely increased its capacity since it began business the first of the year. The company manufactures Screw Machine Products and special and standard Machine Screws, with specialties, such as Hexagon, Square and Round Head Cap Screws, Round and Square Head Set Screws, Collar Screws, Studs and Taper Pins. P. J. Ring, the superintendent of the business, has been with Reynolds & Co. and other Screw manufacturers for nearly 20 years, and J. J. Reidy, the sales agent, has been with Reynolds & Co. continuously for over 17 years, and is well known in the trade as a salesman.

THE ACME STEEL GOODS COMPANY, Chicago, manufacturer of Steel Clasps and Metal Specialties, has opened a branch office in the Empire Building, Atlanta, Ga. Heretofore all goods for this territory have been shipped either from Chicago or New York, but on account of the growing volume of business to be handled it became necessary to provide better facilities for reaching the trade. An adequate stock of goods will be kept at Atlanta from which prompt shipments can be made to all points in the Southern territory.

A DEAL of importance to the Wire and Nail trade in the Southwest has recently been consummated through the purchase of F. G. Smyth & Sons, Wichita, Kan., of the

entire stock heretofore carried by the American Steel & Wire Company at that point. The purchasing company has long been prominent in the wholesale and retail trade of Buggies, Carriages and Farm Machinery in the Southwest, having been established in this business at Wichita for 32 years. A large four-story warehouse, with capacity for the storage of hundreds of carloads, has been erected to take care of the added line of Wire and Nails. The building, which is located on Mead and Santa Fe avenues, is 140 ft. wide and 210 ft. long, with the Santa Fe tracks on one side and the Rock Island on the other side, and a 12-ft. driveway through the center. It is supplied with two elevators of 6000 and 10,000 lb. capacity respectively. The business will be conducted under the name of the Smyth Storage Company.

PRICE-LISTS, CIRCULARS, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

CHAMPION RIVET COMPANY, Cleveland, Ohio: Pamphlet entitled "Scientific Facts and Other Valuable Information About Victor Boiler, Structural and Ship Rivets."

CLEVELAND WIRE SPRING COMPANY, Cleveland, Ohio, Catalogue No. 27 relating to Steel Shop, Cutlery, Stock Room and Rack Boxes, Steel Shop and Foundry Barrels, Steel Barrel Trucks, Adjustable Steel Tool and Supply Racks, Shop Stools, Heavy Steel Trays, Oily Waste and Rubbish Cans, Hardware Steel Nail Boxes, Steel Mortar and Brick Hods, &c.

AMERICAN CAN COMPANY, New York City: Catalogue No. 4 illustrating Tea, Coffee and Spice Cabinets, Cans and Caddies, Scoops, Sample Room Goods, Grocers' Tanks, &c.

GLOBE MFG. COMPANY, Taunton, Mass.: Catalogue devoted to Wire Tacks, Wire Nails, Iron and Brass Escutcheon Pins, Miscellaneous Wire Nails, &c.

NIMMO FENCE & WIRE WORKS COMPANY, Cincinnati, Ohio: Catalogue B, 1908, relating to Norwood Woven Wire Fences, Ornamental and Farm Gates, Settees, Tree Guards, Oak Slat Fence, Stable Fixtures, Vases, &c.

FRANCIS & CO., Hartford, Conn.: Net price-list of Diamond Pointed Tools for truing Emery and Carborundum Wheels, Grindstones, Calender Rolls, &c. These include Lathe and Hand Tools. The firm manufactures Diamond Pointed Tools of all descriptions.

L. F. GRAMMES & SONS, Allentown, Pa.: Circular referring to the Bulldog Nail Puller.

NEPTUNE HARDWARE MFG. COMPANY, 54-55 South street, New York: Catalogues No. 43 and 44, referring respectively to Marine Hardware and specialties and Tackle Blocks.

HARTFORD RUBBER WORKS COMPANY, Hartford, Conn.: Catalogue devoted to Solid Vehicle Tires, for all kinds of Wheels, and the Hartford Tire Mounting Machine for putting on solid two-wire Vehicle Tires.

ODORLESS REFRIGERATOR COMPANY, Chattanooga, Tenn.: Catalogue No. 16, devoted to the line of Imperial Odorless Refrigerators, and Catalogue No. 18, relating to Odorless Refrigerators.

GURNEY REFRIGERATOR COMPANY, Fond du Lac, Wis.: Catalogue No. 18, illustrating and describing Gurney Refrigerators, and Catalogue No. 13, devoted to the line of La Belle Refrigerators.

HIGGIN MFG. COMPANY, Newport, Ky.: 1908 catalogue of Carriage and Automobile Trimmings, including Curtain Fasteners, Leather Loops, Carriage Knobs, Knob Eyelets, Top Props, Top Prop Nuts and Rivets, Curtain Lights, Apron Holders, Hub Band Shells, Shaft Tips, &c.

PHILADELPHIA EXPANSION BOLT WORKS, and STEWARD & ROMAINE MFG. COMPANY, Philadelphia, Pa.: Catalogue No. 29, devoted to Single and Double Expansion and Tog-

gle Bolts, Star Drills, Cap and Bonnet Nuts; also Special Brass and Iron Bolts for the use of Plumbers, &c.

CLEVELAND GALVANIZING WORKS, 3900-3936 Cooper avenue, Cleveland, Ohio: Catalogue No. D-7, relating to White Metal and Brass Pattern Letters and Figures, Wood Letter Fillet, Steel Letters and Figures, Brass Dowels, Shrinkage Rules, Soft Lead Washers and Gaskets, &c.

Foreign Commerce and Its Development.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., November 19, 1907.

THE problem of extending governmental aid to manufacturers and exporters desiring to expand their foreign trade is so far-reaching in all its ramifications and so difficult of solution that the Secretary of Commerce and Labor, as already noted in *The Iron Age*, has invited committees from the leading Boards of Trade and Chambers of Commerce of the larger cities to meet in Washington in December "to consider ways and means to promote the foreign commerce of the United States." The discussion will be limited to the practical help which the Government can properly give, and will not invade the field of tariff revision or reciprocity. No question of revenue will be considered except as it may bear indirectly upon the magnitude of the appropriations which Congress may be asked to make for the purpose of exploiting foreign markets in the interests of our products.

At present the Department of Commerce and Labor is pursuing four distinct lines of work which have a bearing upon the promotion of foreign commerce. They include:

1. The publication of consular and trade reports.
2. The publication of statistics of our foreign trade.
3. The employment of special agents to visit foreign markets and report upon the opportunities for American trade abroad.
4. The publication and furnishing of information relating to foreign tariffs and customs regulations.

With the exception of the statistics of foreign trade, which are published by the Bureau of Statistics, all the work included under these heads is being done by the Bureau of Manufactures.

The Employment of Special Agents to Study Foreign Markets

is the latest and most important branch of promotion work undertaken by the Government. Three years ago Congress appropriated \$30,000 for salaries and expenses of these special agents and subsequently increased the appropriation to \$50,000. With this fund the Department in the second year of its existence sent four special agents abroad to study the markets of Central and South America, Canada and the Orient. The work accomplished was fairly satisfactory, but it soon became apparent that the reports of specialists in certain leading industries would carry much greater weight with American manufacturers, and during the past year a part of the appropriation at the service of the Bureau of Manufactures has been utilized in a special investigation of the foreign market for cotton products, conducted by three men who have devoted their lives to certain branches of this great industry. Their reports have not only proved of great value to cotton manufacturers in this country, but have attracted much attention abroad.

During the coming year experts in leather manufactures and in other lines of industry will be sent out, and equally satisfactory results are expected. Congress will be asked to increase the current appropriation for this work, and it is hoped that at least \$100,000 will be allotted for the purpose. It is probable that the coming conference of the representatives of various trade bodies will adopt a resolution urging a liberal appropriation and will take measures to impress Senators and Representatives with the importance of the work.

Commercial Attaches.

There is also a movement on foot to induce Congress to authorize the employment of a staff of commercial att-

taches, to be stationed in the leading commercial centers of the world and having an official relation with the American consulates-general. These attaches would in no way interfere with the work of special agents, as they would confine their activities and studies to the economic conditions and commercial and industrial legislation of the countries to which they are accredited, while the agents have roving commissions and are chiefly concerned with developments in special industries.

German Consular Service Equipment.

In a memorandum prepared at the instance of the Secretary of Commerce and Labor by N. I. Stone, the department's tariff expert, a striking comparison is made of the equipment of the German consular service with that of the United States, greatly to the disadvantage of the latter. Taking as an illustration a single consulate-general, Mr. Stone says:

The office of the American Consul-General at Berlin and that of the German Consul-General at New York may be considered of equal importance to their respective countries. The staff of our Consulate-General at Berlin consists of the Consul-General, the deputy consul-general, drawing a salary of \$1000 a year (he is the acting consul-general in the absence of his chief, and is charged with responsible work all the time), and three clerks drawing still smaller salaries; in all, a staff of five persons, in addition to a deputy consul-general who receives no compensation.

The staff of the German Consulate-General at New York consists of the Consul-General, one consul, three vice-consuls, one commercial attaché, and a force of translators, clerks, &c., making a total staff of about 30 persons, or more than that of our Bureau of Manufactures, which is charged with the promotion of the commerce of this country with the entire world. As a result of such equipment, our consuls have not sufficient time for study and investigation, as most of their time is taken up with routine work; while the Foreign Office and the Department of Commerce in Germany are promptly supplied with up to date information on any matter which may have the remotest bearing upon German interests in the United States, or upon German-American relations anywhere in the world, because they have men with expert knowledge and free from routine work stationed in the principal centers of the world for that purpose.

The Department of Commerce and Labor would favor the appointment of commercial attaches at Berlin, Paris, London, Vienna, Constantinople, St. Petersburg, Shanghai, Yokohama and Buenos Ayres and would expand the service as rapidly as Congress will provide the necessary funds.

Tariff Division of Bureau of Manufactures.

The Department will also ask Congress to make a large increase in the appropriation for the maintenance of the Tariff Division of the Bureau of Manufactures. The function of this division, as originally created, was "to collate and arrange tariffs of foreign countries in form for distribution," but only \$3500 was set aside for the purpose. For the current year the appropriation was increased to \$5500, but, of course, is absolutely inadequate and very little work has been accomplished. It is hoped that Congress next winter will make a generous provision for this branch of the bureau's work and that in a short time it will be possible for the Tariff Division to supply upon application not only the tariff rates of all the leading foreign countries, but their customs administrative laws and regulations, port charges and other information of interest and value to American manufacturers and exporters.

THE W. H. COMPTON SHEAR COMPANY, 314-320 Camden street, Newark, N. J., states that after a disastrous fire and explosion, which occurred October 31, it is again running to full capacity and able to ship all orders promptly. The increased demand for the company's Reliance brand of Shears, Scissors, Tinner's Snips and Razors has made it necessary to enlarge its facilities by erecting a two-story fireproof building 40 x 90 ft. in size.

THE National Association of Master Sheet Metal Workers, president's office, 2213 Chestnut street, Philadelphia, has lately issued the "Tin Roofer's Hand Book," which will be sent free to any one interested. This is a textbook for the instruction of roofers and sheet metal workers and their apprentices. The standard working specifications adopted by the association for roofers are given in the Hand Book, fully illustrated.

Building Up Export Trade By Hardware Manufacturers.

THE cultivation and expansion of an export trade should always appeal to manufacturers of merchandise for which there exists or can be created a foreign demand. This is recognized by the larger manufacturing interests who appreciate the advantage of and necessity for the broadest markets for their products. In periods of general prosperity the value of such marts is not always apparent to the busy individual, but in depressions sure to come in the home market, foreign outlets become indispensable. With a worldwide field there is less likelihood, simultaneously, of unfavorable market conditions in widely separated territory. Therefore the purchasing power of the foreign markets can be relied on to materially supplement the domestic demand, help keep a working organization together and plant and capital employed, without making ruinous concessions in price.

The purpose of this article, however, is to offer some helpful suggestions to the relatively large number of smaller manufacturers, who, while perhaps recognizing the force of what is often self-evident, are not always informed as to practical methods for accomplishing profitable results. Actual, successful experience is more valuable than theorizing and our readers will doubtless be interested in the following description of methods adopted by a firm of exporters representing about a dozen American manufacturers of Industrial Implements, Machines and Tools. Close application, thoughtful and intelligent treatment of this subject has developed, principally through the channels of careful correspondence and circularization, within five years a large business, thoroughly satisfactory alike to this export house and its principals.

No System So Effective as Foreign Visitation.

Doubtless no system short of actual contact will accomplish so effectually the introduction abroad of American manufactures as personal visits to the buying centers, by qualified individuals, possessing special and exact trade knowledge of particular lines, backed with samples and the necessary traits incidental to expert salesmanship anywhere, but production and capital in such instances necessarily bear some relation to the time and expense required.

Creation of a Mailing List.

The basis in this particular instance was a mailing list, the names and addresses being gradually acquired in various ways: Sometimes by culling items from representative trade journals, scrutinizing standard foreign directories, and scanning United States Daily Consular and Trade Reports, the latter being gratuitously distributed on application to the Bureau of Manufactures, Department of Commerce and Labor, Washington, D. C., also the receipt of foreign inquiries sometimes addressed to the manufacturer direct and by him forwarded to the export representative and in innumerable other ways which vary with the circumstances, but which attract the notice of alert, earnest, close observers. The trade of the house has also been increased by personal visitation or correspondence with export buyers and commission houses, &c., in the seaboard cities.

The mailing list is kept on the card index system in an eight-drawer cabinet. To avoid the expense of a larger office force than can be profitably and permanently employed portions of this work are covered by a near-by printer.

A Circularizing Campaign.

At the beginning of a circularizing campaign, the cards in the drawers are sent intact to the printer, slipping the drawers from the original or office cabinet into a skeleton portable cabinet provided for convenience in carrying and from which names and addresses are taken for the circular envelopes, the addressed envelope being returned to the exporter in the same envelope boxes.

Individuality and Concentration.

The mistake is not made of attempting to accomplish too much at one mailing, individuality and concentration

on a given article being considered as of prime importance, while the product of but one manufacturer is given publicity.

Preparation of a Circular.

The senior partner, well trained in the business previous to establishing this house five years ago, selects the article or line of one manufacturer, prepares the copy for the printer in English and other languages, and arranges for the translations himself. This is especially important, as the translation must be something more than scholarly and literal, there being abundant opportunity for curious and ridiculous blunders and misinterpretations. For instance, in the days of the Panama Canal under the De Lesseps régime, an order for Wood Screws accompanied by diagrams brought large quantities of Screws turned from wood according to specifications, at great expense compared with the cost of the iron or steel Screws familiarly known in the trade as Wood Screws, which were meant, while in the same category from the same source an order for Washers, meaning the common iron Washer, was at first interpreted to mean washerwomen. Such errors are common to-day and we understood in the trade, and should be carefully guarded against. The translator should be qualified in the idioms of trade nomenclature, as well as the literal signification of terms.

When these requirements have been met the printer reproduces as many hundreds or thousands of the letter, on a sheet usually about 8½ x 10½ in., apparently produced singly on a typewriter on the blank *bona fide* business letter heads of the manufacturer, who furnishes them from his own supply, thus using exactly the same stationery in paper and heading that is used in his own direct business correspondence. The foreigner thus knows at a glance the original source of supply as he reads the "typewritten" communication, which closes with the manufacturer's signature, printed at the same time and in the same type and ink as the body of the circular, followed underneath with "per," to be later filled in with individual initials or name with pen and ink. This method produces at small cost an effective trade letter, which is only intended to establish a connection and get a possible customer's attention, but which really serves the best interests of both seller and buyer.

Watchfulness and Care.

When the various details have been decided as to whom, where and in what language the circulars will be sent out, they are gone over again by the head of the house to see that, according to his expert knowledge, there is no confusion or misfits.

The letter heads, containing as they do the manufacturer's name, address, business card, cut of works, names of officers, cable and telephone addresses, &c., also have on the date line which actually starts the letter the city and street address of the export representative, without, however, the name of his firm appearing anywhere.

Replies Reach the Export Representative.

Thus in the replies received the manufacturers' names appear on the envelopes, but in the main addressed to the office of the export representative. Some go direct to the works, and according to agreement are forwarded to the exporter for treatment. In this instance good faith is maintained by both parties to the agreement, with mutually good results.

English, French, German and Spanish Principal Languages.

In the case under consideration the circulars are usually prepared in English, French, German and Spanish. As a compromise letters for Russia can be advantageously sent in German, although the language of the country is always best, but Russian type is not always available. Similarly French can be used for Italy, and much correspondence from Bulgaria comes in the French language, hence French serves well there. Here it may be said that English is fast taking precedence as a world language.

Postage Kept Within Reasonable Limits.

At the initiative, where markets in five continents are being cultivated, it is important to keep the postage bills

on an economical basis, and too much must not be expected from a batch of letters, although as many as three orders in one day on one line have been received. Circulars thus prepared and which look to the average recipient like a typewritten letter, entirely personal, can be sent through the mails, together with illustrated folders, booklets or small catalogues for a postal charge of 1 cent per half ounce in lots of 20 or more, to any foreign post office in the International Postal Union, which practically covers the entire world. To secure this privilege certain requirements must be complied with. Envelopes are prepared so that after the sheets are inclosed and the regular flap sealed, the end flap, ungummed is tucked in so as to hold securely the inclosures, at the same time affording easy access to the contents by the postal authorities.

Return Clause on Envelope.

Another important feature is the printing of the customary return clause in the upper left-hand corner as to delivery in 10 days, &c., the address corresponding with that of the city or post office at which it was originally mailed, and giving as on the inside the manufacturer's name with the exporter's address.

Weeding Out Worthless Names.

If for any reason the letter is not delivered it comes back as a rule in due course, and invariably from most countries without additional postage charge, although occasionally a "due stamp" will compel return postage. The mailing list can thus be checked up and kept thoroughly revised. Thus, if an addressee has died, retired, moved or for any reason is not found, the return letter announces it and the facts may be noted on the card.

Obsolete Names Kept for Reference.

The card, however, should not be destroyed, but kept in a proper receptacle for future reference. Sometimes, however, through inadvertence the letter may be wrongly addressed or street and number in a large city omitted, in which event a second trial is made. If it comes back again it is relegated to the "dead" list.

Brief Observations and Data on Mailing Cards.

Data, notes, remarks, &c., of a helpful character, tersely put, add much to the value of a mailing list card and serve to individualize what at the beginning is only a mass where all look alike. The results depend largely on the exercise of an intelligent discrimination by a qualified individual concerning the language of the circular or matter inclosed, so that it will as far as possible be of use and understood by the recipient. What has been accomplished in this direction by the house to which reference is made is remarkable, but the details have not been intrusted solely or largely to inexperienced clerks.

Stock of Prepared Circulars Always Ready.

The circulars and envelopes so prepared are kept ready for mailing whenever the time is considered propitious, and they are going to some quarter all the time. To new territory a trial shot is often made of, say, 20, sent as feelers to ascertain whether or not there is a market for the commodity sought to be introduced in that city or country, and also whether the letter as prepared is reasonably effective or whether some changes or modification will better accomplish the purpose before more money and time are wasted.

Examples That Prove Method's Success.

By careful, intelligent and persistent effort, principally along these lines, a business has been created that now reaches into large quantities and of a highly profitable character, and by a man who was never out of the United States.

In the office of the firm hangs a photograph of a train load of bulky merchandise, requiring more than 20 flat cars to transport to the seaboard and aggregating in value approximately \$28,000, while another similar order totaled \$11,000.

Other orders have been received at different times from various quarters of the globe running into hundreds and thousands of dollars.

In one instance the reading of a squib in a trade paper prompted the sending of a circular letter, with no special preparation or peculiar conditions which resulted in an order for a few hundred dollars worth of goods which was soon followed with an order for nearly \$12,000 worth, all of which was paid for before the goods left this country, with the exception of about \$350 worth of repairs, which were drawn against and paid for before delivery abroad.

In this case the importer sent an expert workman here who spent four months at the Western factory making the goods, to qualify himself to set up, repair and explain this particular line at destination or straighten tangles after sale in the future, and it all grew out of the right man reading and utilizing a squib.

Early last November a folder catalogue was sent to a German South American address without even a circular letter, at a cost of 1 cent, describing a certain engine listing from \$95 to \$725. The recipient in this instance, immediately cabled an order, two shipments being made on November 14 and 18, aggregating \$422 worth of goods. Sometime in March, \$1125.22 worth of the same kind of goods were shipped and a little later a shipment of \$3700 was going forward, the manufacturer being well satisfied with the credit and standing of the purchaser his representative had secured.

Foreign Trade Receptive.

As indicative of the readiness with which communication can be established if properly conducted, responses have been received, direct, as an outcome of these circulars from West Coast, South American branches, of some of the largest and best known export houses in the United States, operating their own regular lines of steamers from Atlantic ports to West Coast ports, from Punta Arenas in the Straits of Magellan to Guayaquil and even San Francisco. In one instance, the parent house in this country was not 5 min. walk from the office of the addresser and the branch house knew it, adding in their reply that any orders would pass through the main office.

Wasted Effort and Money.

It is undeniably true that much time, effort and money have been fruitlessly spent in circularizing, but ably and intelligently conducted it can be made profitable by manufacturers who have neither capital, production or inclination to justify sending properly equipped selling representatives on long expensive journeys.

Once Introduced, the Trade Can Be Retained.

The main point is to by some means get the goods for which a market exists or can be made, introduced, when by proper care with anything like a parity in price with Great Britain and continental Europe our manufacturers can hold their own; not neglecting to later keep the foreigner supplied without too much advance in price, whenever the home market happens to be strong. Constant supply is sometimes more effective, after a trade has been established, than concessions in price and after the foreigners' trade has been obtained, it is most unwise to largely curtail or cut off his supply.

NATHANIEL JACOBI, a well-known and valued citizen of Wilmington, N. C., died on the 5th inst. Mr. Jacobi was born in London, England, in 1828, and was thus in his eightieth year. At the age of four or five he came to this country and settled with his parents in Charleston, S. C. After the Civil War he located in Wilmington, and in 1869 purchased the Hardware business of the late James Wilson, which had been established in 1856. In 1888 his son, Marcus W. Jacobi, was admitted to partnership, and the style was changed to the N. Jacobi Hardware Company, which has since continued. A year later, a second son, Joseph N. Jacobi, was taken into the firm. Mr. Jacobi was president of the Mechanics' Home Association and director of the Murchison National Bank, and was prominent in the fraternal and religious world.

CHAS. F. HURBURGH, Leland, Ill., has purchased the Ebingson Hardware store, and will continue the business.

The Diamond Lawn Edger and Trimmer.

The accompanying illustration represents a lawn edger and trimmer made by Whitman & Barnes Mfg. Company, Chicago, Ill. It consists of a U-shaped plow, to which is attached a push handle and an adjustable gauge wheel. The plow is made with a sharp cutting edge in front and is provided with a rear wing to throw the sod clear of the furrow. This leaves a clean cut furrow along the edge of the walk which requires no further cleaning or finishing. As the wheel is adjustable for high or low cutting the edger will work satisfactorily on a lawn elevated above the level of the walk, and also cuts equally well when the lawn surface is below the walk level. The depth of furrow is likewise regulated by the wheel, and the handle is made adjustable to fit the height of the operator. It is stated that the machine is strongly and durably built, tastefully finished and is operated with ease. The prevalent use of cement walks and drives led to the development of the machine, designed for of cement walks, driveways, trimming turf along the edges &c. It may be also used with equal facility for trimming the edges of lawns, gravel walks, and is serviceable for outlining flower beds of various shapes.

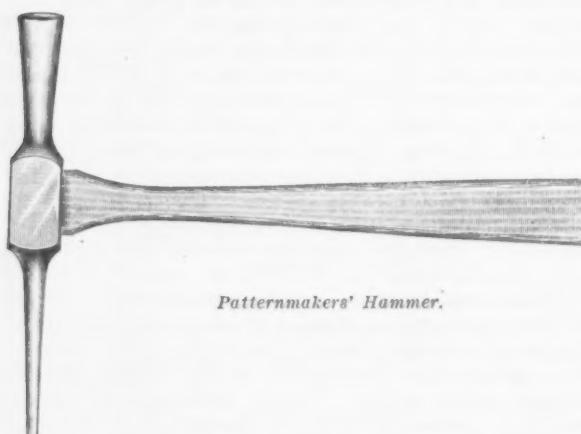


The Diamond Lawn Edger and Trimmer.

equal facility for trimming the edges of lawns, gravel walks, and is serviceable for outlining flower beds of various shapes.

Patternmakers' Hammer.

The Dosch Mfg. Company, Bridgeport, Conn., has recently brought out the patternmakers' hammer, which is shown, one-third actual size, in the accompanying illustration. The long pin is designed to overcome the difficulties experienced by patternmakers trying to hold and drive small nails, brads, tacks, &c., in deep holes, narrow spaces and places hard to reach. The hammer head is



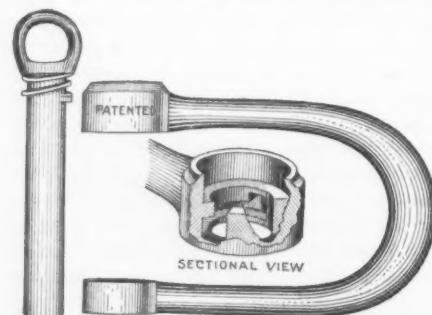
Patternmakers' Hammer.

of steel, turned to shape, hardened and polished. The handle is of hickory, highly finished and of a light, approved shape. The hammers are made in two sizes, the illustration representing the larger, and are guaranteed by the company to be first class in every respect.

The Richards Self Locking Pin Clevis.

The Richards Mfg. Company, Aurora, Ill., is putting on the market the clevis shown herewith. The clevis and pin are made of malleable iron. The pin can be

inserted and locked in an instant by simply pressing down and giving it a slight turn, and is removed in the same manner. The clevis is made in two sizes, No. 1,



The Richards Self-Locking Pin Clevis.

1½ in. inside, 4 in. long, weighing 1 lb.; and No. 2, 2½ in. inside, 5 in. long, weighing 1¼ lb.

Smokeless and Odorless Kitchen Utensils.

The Bridgeport Wire Goods Company, Bridgeport, Conn., New York office with C. E. Peabody & Co., 155 Chambers street, is offering the smokeless and odorless broiler and griddle illustrated herewith. The broiler,

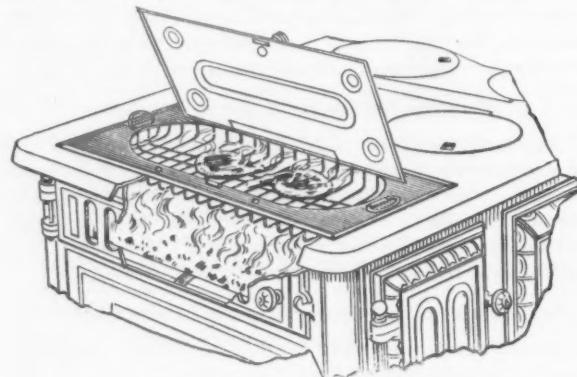


Fig. 1.—Smokeless and Odorless Broiler.

shown in Fig. 1, fits the opening of No. 8 or 9 stoves. The planished iron plate rests on the top of the stove, to which is attached a heavy retinned wire griddle. In use a highly polished retinned hinged cover is closed over the broiling meat. Smoke and odor is thus done away with and the fire is prevented from dying while broiling. The broilers are packed in individual cartons. In Fig. 2

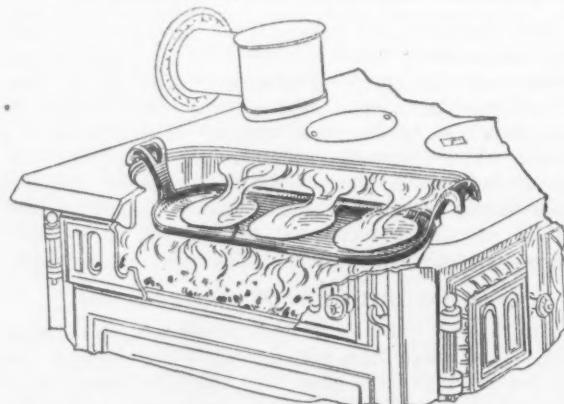


Fig. 2.—Smokeless and Odorless Griddle.

is shown a griddle made of high grade cast iron, attractively designed and nicely finished with the surface finely polished. It is made to set down in the stove, so that the draft carries the smoke, smell and grease up the chimney, thus saving the wall decorations and furnishings of the house.

The Ideal Tank.

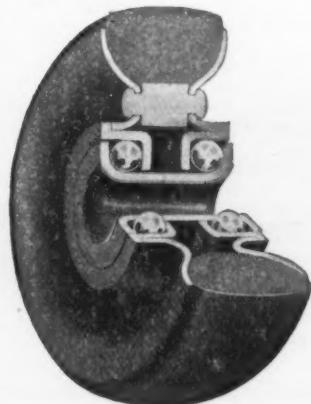
The Ideal Tank Works, Meadville, Pa., is offering the tank shown herewith. Connected with the faucet is an air tube, extending to the top of the tank, so arranged that when the faucet is opened the tube is automatically opened by the same operation, thus allowing plenty of ventilation or vent to permit drawing the fluid. The fact is emphasized that when drawing fluid from the tank ventilation is automatically provided, and when the faucet is closed the tube is automatically closed, so that the tank is absolutely air tight. This arrangement obviates the use of a screw cap on the tube, to close it. The tank is made of heavy galvanized steel, the bottom is cone shaped and double seamed, the top is cone shaped and seamed, and all seams are riveted and soldered inside and outside. The tank is made for holding gasoline, naptha, turpentine, kerosene and all high test oils, and is especially designed for use by owners of automobiles, naptha launches and gasoline engines. The tanks are

*The Ideal Tank.*

regularly made in barrel, half barrel, quarter barrel, ten and five gallon sizes. The barrel size, holding 65 gallons, is 30 in. high and 26 in. in diameter; the smaller sizes being made in proportion. The company also makes special odd shaped tanks, in any shape required, including half round, square, oblong, &c., so that they will fit in any out-of-the-way place on an automobile, permitting a supply of gasoline to be carried.

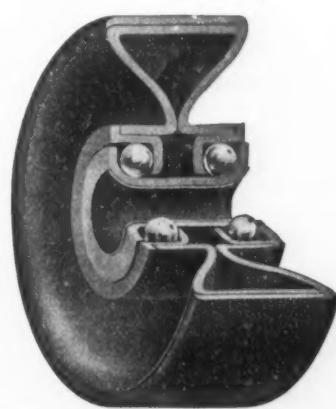
"Nice" Skate Rolls.

We illustrate herewith a new rubber-tired all steel patented skate roll, which has been placed before the

*Fig. 1.—Rubber Tired Skate Roll.*

trade by the Pressed Steel Mfg. Company, 454 Bourse Building, Philadelphia, Pa. The bodies of the wheels are of pressed steel, designed to give great strength.

The bearings are of the usual cup and cone ball type. The cones, which are in two sections, are of the required length, so that when placed in position, the exact adjustment of the balls is obtained and always maintained. The shaft thimble extends entirely through the bearing, and after being placed in position, is pressed

*Fig. 2.—All Steel Skate Roll.*

out at the edges, forming a perfect lock, which holds the bearings and the roll together and precludes the loss of any parts or balls. No adjustment whatever is required in fitting the rolls. They will fit any skate, the shaft thimble being of standard size. They run smoothly and noiselessly, and each is complete in itself. The rim of the rubber tired wheel is in two sections, as shown in Fig. 1, held together with pressed steel clamps, which also form a lock for the tire, which is of specially prepared rubber and will withstand great wear. It may be seen in Fig. 2 that the all-steel roll has a double rim, and that the support to the rim is given at the edges, that being the greatest wearing point, thereby insuring in addition to strength, long wearing power. The rolls are of the standard size and are lighter than others of a like type, and are meant to supply the need of a moderate price roll.

The Reliable Jack and Compound Tire Pump.

The Elite Mfg. Company, Ashland, Ohio, for whom the New York Sporting Goods Company, 17 Warren street, New York, is selling agent, is offering the jack and

*Fig. 1.—The Reliable Jack.**Fig. 2.—The Reliable Compound Tire Pump.*

pump shown herewith. The jack is designed for lifting automobiles and is constructed of malleable iron and steel, the screw being of special steel. The lever has an up and down motion and does not interfere with the springs or body of the car. The jack is made in two sizes—No. 1 for cars up to 4000 lb. and No. 2 for cars up to 8000 lb. in weight. The jacks are self-locking at any point and will raise a car any fraction of an inch, from 10 $\frac{1}{4}$ to 18 $\frac{1}{2}$ in. with the No. 1 and from 12 to 20 in. with

the No. 2. It is said that a child 10 years old can raise or lower the heaviest car by the use of the jack; that it can be adjusted up or down very quickly by means of the crank on the gear side; that it cannot get out of order, and that there are no loose parts which might get lost. The pump illustrated in Fig. 2 is of the compound type and is alluded to as having a large capacity, as easy to operate under high pressure and simple in construction. There is but one packing box, which is on the outside, and the swivel handle prevents binding and cutting the piston rod. Each pump is said to be tested to 200-lb. pressure before leaving the factory.

Gaston Pitless Wagon Scale.

The N. B. Gaston's Sons Company, Beloit, Wis., has added to its line during the past year the Pitless wagon or stock scale, the foundation and compound beam of which are shown in the accompanying illustrations. As the name indicates, the scale is designed to set above the

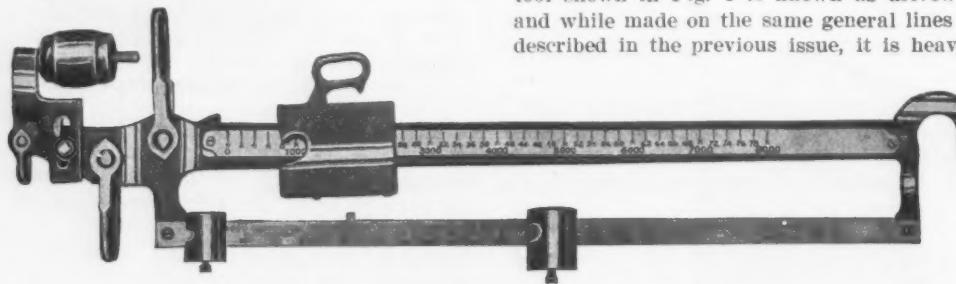


Fig. 1.—Compound Beam of Pitless Scale.

ground. It has an elevation of only 8 in., and is shipped ready to install, so that it requires no mechanic. It is made entirely of metal with the exception of the beam box and platform. The frame is constructed of 8-in. steel channels at ends, with oscillating bearings for the pipe levers. The sides of the frame are heavy steel angles bolted to the end channels at each corner with two $\frac{3}{8}$ -in. bolts. The only lumber required for putting together is 14 2 x 12 planks 8 ft. long, two 2 x 4, 13 ft. long, and two 2 x 3, 8 ft. long. I beams are used as sills for the platform. These are equipped with bolts and castings to fasten the nailing strips. The bearings are also fastened to these I beams at the factory, so that they are already to install without adjustment. The compound beam shown in Fig. 1 has the upper or large poise running on rolls with a latch, which locks the poise directly on graduating marks. The upper beam has a brass face plate with large figures stamped plainly

illustrated herewith are also manufactured by John Stortz & Son, 210-212 Vine street, Philadelphia, Pa. The tool shown in Fig. 1 is known as driveway groover G, and while made on the same general lines as the jointer described in the previous issue, it is heavier and has a



Fig. 1.—Driveway Groover G.

$\frac{5}{8}$ -in. blade, making a wide groove. The handle is of maple and locked in position by a lug which makes it

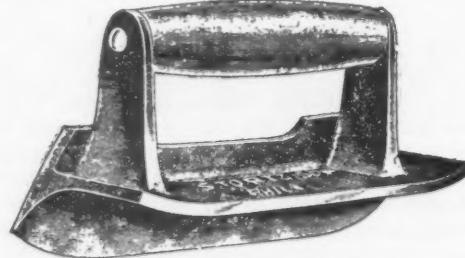


Fig. 2.—Curb Tool or Edger.

impossible for it to turn or work loose. The tool is also made in bronze or iron. Fig. 2 illustrates a curb tool or



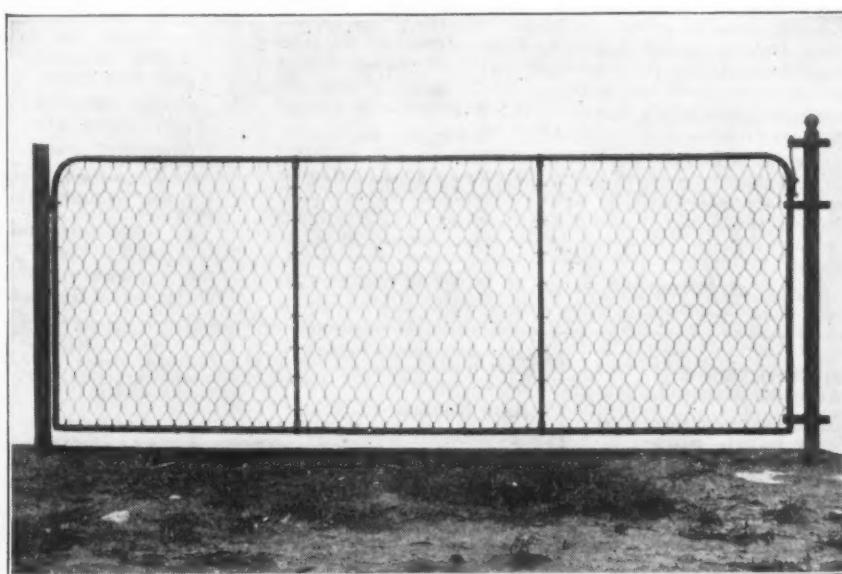
Fig. 2.—Base for Platform of Gaston Pitless Scale.

thereon. The lower beam and poise are of solid brass highly polished. The entire capacity of the scale is graduated on these beams, and as the fractional beam reads down to 2 lb. no loose weights are required. The beam box is made of good material and painted with two coats of white lead. The shipping weight of the scale is 1300 lb. and its capacity is five tons. The company states that it will last indefinitely and warrants it for five years.

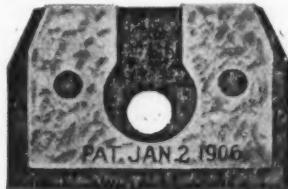
edger, sometimes called a quarter round edger, which is used for rounding or finishing cement curbs, walks, &c., so as to prevent the edges or sides chipping. The tool can be furnished in either bronze or iron, and in a variety of sizes, having a radius from $\frac{5}{8}$ -in. up to 6 in. It is 7 in. long and varies in width and depth according to the radius. The tool also has the locked maple handle and varies in weight according to size.

The Ellis Gate.

The accompanying illustration represents a gate placed on the market by the Shadbolt & Boyd Iron Company, Milwaukee, Wis. The gate is of strong construction, being made of tubular steel and reinforced by a process of the company which, it is stated, renders it unbreakable. It is pointed out that the hinges are usually the weakest point in gates and that this difficulty is overcome by a bar suspension brace attached to the top of the gate post, which can be raised or lowered, thus removing the weight from the hinges. The gates are covered with diamond mesh fencing, which is referred to as outlasting the ordinary square mesh. The gate may be hung on metal or wood posts. The gates are furnished in four widths of opening—3, 12, 14 and 16 ft. The 3-ft. gate is made from 30 to 48 in. high, and the other widths from 48 to 58 in. high.

*The Ellis Gate.***Bosley's Air Stops.**

The accompanying illustrations represent air stops and their application to window sash, manufactured by

*Fig. 1.—Bosley's Air Stop.*

the D. W. Bosley Company, Fulton and May streets, Chicago, Ill. The stops are made of best quality black felt,

*Fig. 2.—Application of Air Stop.***PAINTS, OILS AND COLORS****Animal, Fish and Vegetable Oils— $\frac{1}{2}$ gal.**

Linseed, Western, raw.....	45 @ 46
City, Boiled.....	48 @ 49
City, Raw.....	47 @ 48
Raw, Calcutta, in bbls.....	69 @ .*
Lard, Extra Prime, Winter.....	74 @ 77
Extra No. 1.....	53 @ 56
No. 1.....	49 @ 52
Cotton-seed, Crude, f.o.b. mills.....	21 1/2 @ 23
Summer Yellow, Prime.....	33 @ 33 1/2
Summer White.....	33 @ 33 1/2
Yellow Winter.....	42 @ 42
Sperm, Crude.....	59 @ 60
Natural Winter.....	71 @ 74
Bleached Winter.....	74 @ 76
Bleached Winter, Extra.....	@ .
Tallow, Prime.....	59 @ 60
Whale, Crude.....	35 @ 36
Natural Winter.....	46 @ 48
Bleached Winter.....	49 @ 51
Extra Bleached Winter.....	52 @ 54
Menhaden, Brown, Strained.....	41 @ 42
Light Strained.....	41 @ 42
Northern.....	@ .
Southern.....	@ .
Cocoanut, Ceylon.....	7 1/2 @ 8
Cochin.....	10 lb 9% @ 10
Cod, Domestic, Prime.....	42 @ 44
Newfoundland.....	44 @ 46
Red, Elaine.....	46 @ 49
Saponified.....	10 lb 6% @ 7
Olive, Yellow.....	75 @ 80
Neatsfoot, Prime.....	58 @ 60
Palm, Lagos.....	10 lb 6% @ 7 1/2

Mineral Oils—

Black, 20 gravity, 25@30 cold test.....	13 @ 13 1/2
20 gravity, 15 cold test.....	13 1/2 @ 14
Summer.....	12 1/2 @ 13
Cylinder, light filtered.....	20@21
Dark, filtered.....	18 @ 19
Paraffine, 90-90 sp. gravity.....	14 1/2 @ 15
90 sp. gravity.....	13 1/2 @ 14
88 sp. gravity.....	11 @ 11 1/2
Red.....	13 1/2 @ 14

Miscellaneous—

Barytes:	
White, Foreign.....	\$18.50 @ 20.50
Amer., floated.....	\$1 ton 19.00 @ 20.00
Off color.....	\$1 ton 13.00 @ 16.50
Chalk, in bulk.....	\$1 ton 3.00 @ 3.25
In bbls.....	\$100 lb ... @ .35
China Clay, Imported.....	\$1 ton 11.00 @ 17.50
Cobalt, Oxide.....	\$100 lb 2.50 @ 2.60
Whiting, Commercial.....	\$100 lb 43 @ .52
Gilders.....	\$100 lb .55 @ .65
Ex. Gilders.....	\$100 lb .60 @ .65
Putty, Commercial—$\frac{1}{2}$ gal.	
In bladders.....	\$1.70 @ 1.85
In bbls, or tubs.....	1.20 @ 1.45
In 1 lb. to 50 lb. cans.....	.25 @ 2.95
In 12 1/2 to 50 lb. cans.....	1.50 @ 1.90
Spirts Turpentine—$\frac{1}{2}$ gal.	
In Oil bbls.....	49 1/2 @ 50
In machine bbls.....	50 @ 50 1/2
Glue—	
Cabinet.....	12 @ 15
Common Bone.....	7 1/2 @ 9
Extra White.....	18 @ 24
Foot Stock, Brown.....	12 @ 14
German Hide.....	12 @ 18
French.....	10 @ 12
Irish.....	13 @ 16
Low Grade.....	10 @ 12
Medium White.....	14 @ 17
Gum Shellac—	
Bleached, Commercial.....	32 @ 34
Bone Dry.....	41 @ 43
Button.....	40 @ 50
Diamond I.....	53 @ 55
Fine Orange.....	35 @ 40
A. C. Garnet.....	45 @ 46
G. A. L.....	32 @ 33
Kala Button.....	22 @ 25
D. C.....	56 @ 57
Octagon B.....	51 @ 52
T. N.....	30 @ 32
V. S. O.....	53 @ 55
Colors In Oil—	
Black, Lampblack.....	12 @ 14
Blue, Chinese.....	36 @ 46

White Lead, Zinc, &c.—

Lead, English white, in Oil.....	10% @ 10%
Lead, American White:	
Lots of 500 lb. or over, in Oil.....	@ 7
Lots less than 500 lb. in Oil.....	@ 7 1/2
Lead, White, in oil, 25 lb. tin pails, add to keg price.....	@ 4
Lead, White, in oil, 12 1/2 lb. tin pails, add to keg price.....	@ 1
Lead, White, in oil, to 5 lb. in casted tins, add to keg price	@ 1 1/2
Lead, American, Terms: For lots of 12 tons and over \$4.60 rebate; and 2% for cash if paid in 15 days from date of invoice: for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.	
Zinc, American, dry.....	5% @ 5 1/2
Zinc, French:	
Antwerp, Red Seal, dry.....	8%
Antwerp, Green Seal, dry.....	10%
Paris, Red Seal, dry.....	9 1/2
Paris, Green Seal, dry.....	11
Zinc, V. M. French, in Poppy Oil: Green Seal:	
Lots of 1 ton and over.....	13 1/2 @ 13 1/2
Lots of less than 1 ton.....	13 1/2 @ 13 1/2
Zinc, V. M. French, in Poppy Oil: Red Seal:	
Lots of 1 ton and over.....	11 1/2 @ 12 1/2
Lots of less than 1 ton.....	12 1/2 @ 12 1/2
Discounts—French Zinc—Discounts to buyers of 10 bbls. lots of one or mixed grades 1%: 25 bbls., 2%; 50 bbls., 4%.	
Dry Colors—	
Black, Carbon.....	64 @ 10
Black Drop, American.....	31 @ 8
Black Drop, English.....	5 @ 15
Paints, Oils and Colors	
Black, Prussian.....	32 @ 36
Blue, Ultramarine.....	13 @ 16
Brown, Vandycote.....	11 @ 14
Green, Chrome.....	12 @ 16
Green, Paris.....	12 @ 21
Sienna, Raw.....	12 @ 15
Sienna, Burnt.....	12 @ 15
Umber, Raw.....	11 @ 14
Umber, Burnt.....	11 @ 14
Black, Ivory.....	16 @ 20
Lamp, commercial.....	4 @ 6
Blue, Celestial.....	4 @ 6
Blue, Chinese.....	30 @ 33
Blue, Prussian.....	28 @ 32
Blue, Ultramarine.....	35 @ 35
Brown, Spanish.....	1/2 @ 1
Carmine, No. 40.....	33 10 @ 32 25
Green, Chrome, ordinary.....	3 1/2 @ 5
Green, Chrome, pure.....	17 @ 25
Lead, Red, bbls., 1/2 bbls., kegs.....	7 1/2 @ 7 1/2
Litharge, bbls., 1/2 bbls., kegs.....	7 1/2 @ 7 1/2
Ocher, American.....	1/2 ton \$8.50 @ 16.00
American Golden.....	2 1/2 @ 3 1/2
French.....	1 1/4 @ 2
Foreign Golden.....	3 @ 4
Orange, Mineral, English.....	10 @ 12
Lead, White, in oil, 12 1/2 lb. in tin pails, add to keg price	@ 1
Lead, White, in oil, to 5 lb. in casted tins, add to keg price	@ 1 1/2
German.....	11 1/2 @ 12
American.....	8 1/2 @ 9
Red, Indian, English.....	4 1/2 @ 6
American.....	3 @ 3 1/2
Red, Turkey, English.....	4 @ 10
Red, Tuscan, English.....	7 @ 10
Red, Venetian, Amer. 10 lb. bbl. \$1.15 @ 1.25	
English.....	100 lb bbl. \$1.15 @ 1.60
Sienna, Italian, Burnt and Powdered.....	3 @ 9
Italian, Raw, Powdered.....	3 @ 7
American, Raw.....	10 @ 12
American, Burnt and Pow'd.....	4 1/2 @ 6
Talc, French.....	1/2 ton \$18.00 @ 25.00
American.....	39 ton 15.00 @ 25.00
Terra Alba, French.....	39 100 lb. .90 @ 1.00
English.....	39 100 lb. .80 @ 1.00
American.....	39 100 lb. No. 1. .75 @ .80
American.....	39 100 lb. No. 2. .60 @ .65
Umber, Turkey, B. & P. & Pow.	2 @ 3 1/2
Turkey, Raw and Powdered.....	2 1/2 @ 3 1/2
Burnt, American.....	1 1/2 @ 2
Raw, American.....	11 1/2 @ 3
Yellow Chrome, Pure.....	12 @ 14
Vermilion, American Lead.....	7 @ 25
Quicksilver, bulk.....	65 @
Quicksilver, bags.....	65 @
English, Imported.....	65 @ 70
Chinese.....	30.90 @ 1.00

November 21, 1907

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Price.—A range of prices is indicated by means of the symbol @. Thus 33 1/2 @ 33 1/2 & 10 signifies

that the price of the goods in question ranges from 33 1/2 per cent. discount to 33 1/2 and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—“The Iron Age Standard Hardware Lists” contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Columbian and Domestic..... 33 1/2%
Norus..... 14%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent..... 5%
Tappin's Perfection..... 3 1/2%

Ammunition—See Caps, Cartridges, Shells, &c.

Anti-Rattlers—

Fernard Mfg. Co., Burton Anti-Rattlers, 1/2 doz. pairs Nos. 1, \$1.75; 2, \$1.60; 4, \$1.00; 5, \$1.50.
Fernard Quick Shifter, 1/2 doz. pairs..... \$2.00 @ \$3.00

Anvils—American—

Eagle Anvils..... 1/2 lb. 9 1/2@8 1/2¢
Hay-Budden, Wrought..... 1/2 lb. 9 1/2@9 1/2¢
Trenton..... 1/2 lb. 9 1/2@9 1/2¢

Imported—

Peter Wright & Sons, 1/2 lb. \$1 to 3 1/2
lb. 11¢; 350 to 600 lb. 11 1/2¢.

Anvil, Vise and Drill.—Millers Falls Co. \$18.00..... 16 & 10%

Apple Parers—See Parers, Apple, &c.

Aprons, Blacksmiths'—

Livington Nail Co. 33 1/2%

Augers and Bits—

Com. Double Spur..... 75 @ 80%
Jennings' Patn., Bright, 65¢@10%
Black Lip or Blued..... 65 @ 65¢
Boring Mach. Augers..... 70%

Car Bits, 12-in. twist..... 40¢@10%
Ford's Auger and Car Bits..... 40¢@10%
Ft. Washington Auger Co., Com-ard..... 35%
Forstner Pat. Auger Bits..... 25%

C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list, 28 & 7 1/2%
No. 20, R. Jennings' list, 50%
Russell Jennings'..... 25 @ 25%

L'Hommiedien Car Bits..... 15%
Mayhew's Countersink Bits..... 45%
Pugh's Black..... 20%
Pugh's Jennings' Pattern..... 25%

Snell's Auger Bits..... 20%
Snell's Bell Hangers' Bits..... 20%
Snell's Car Bits, 12-in. twist..... 20%
Snell's King Auger Bits..... 20%
Wright's Jennings' Bits..... 20%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Clark's Pattern, No. 1, 1/2 doz. 12%;
No. 2, 18%..... 60 & 10%
Ford's, Clark's Pattern..... 65 & 5%
C. E. Jennings & Co., Steer's Pat. 25%
Lavigne Pat., small size, \$18.00; large
size, \$20.00..... 60 & 10%

Swan's..... 60%

Gimlet Bits—

Per gro.
Common Dble. Cut..... \$3.00 @ \$3.25
German Pattern, Nos. 1 to 10,
\$4.75; 11 to 15, \$5.75

Hollow Augers—

Bonney Pat., per doz. \$8.50 @ 7.00
Ames..... 25 & 10%
Universal..... 20%

Ship Augers and Bits—

Ship Augers..... 10 & 10%
Ford's, C. E. Jennings & Co.:
L'Hommiedien: 6%
Watrous'..... 33 1/2 & 7 1/2%

Snell's..... 20%

Awl Hefts—See Handles, Mechanics' Tool.

Awls—

Brad Awls: Handled..... gro. \$2.75 @ \$3.00
Unhandled, Shilded..... gro. 65 @ 66¢
Unhandled, Patent..... gro. 60 @ 70¢

Peg Awls:

Unhandled, Patent..... gro. \$1 @ 3¢
Unshiled, Shilded..... gro. 65 @ 70¢

Scratch Awls:

Handled, Com. gro. \$3.50 @ 4.00
Handled, Socket..... gro. \$11.50 @ 12.00

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

Single Bit, base weights: Per doz.

First Quality..... \$1.75 @ \$1.50

Second Quality..... \$1.25 @ \$1.50

Double Bit, base weights:

First Quality..... \$7.00 @ \$7.50

Second Quality..... \$6.50 @ \$6.75

Axle Grease—

See Grease, Axle

Axes—Iron or Steel

Concord, Loose Collar..... 4 1/2¢ @ 5¢
Concord, Solid Collar..... 4 1/2 @ 5 1/4¢

No. 1 Common, Loose..... 3 1/2 @ 4 1/4¢

No. 1 1/2 Com., New Style..... 4 1/2 @ 5 1/4¢

No. 2 Solid Collar..... 4 1/2 @ 5 1/4¢

Half Patent:

Nos. 7, 8, 11 and 12..... 65 @ 65¢ @ 10%
Nos. 13 to 14..... 65 @ 65¢ @ 10%
Nos. 15 to 18..... 70 @ 70¢ @ 10%
Nos. 19 to 22..... 70 @ 70¢ @ 10%

Boxes, Axle—

Common and Concord, not turned

lb. 5 @ 6¢

Common and Concord, turned

lb. 6 @ 7¢

Half Patent..... lb. 9 1/2 @ 10¢

Bait—

Fishing—

Hendry:

A Bait..... 3 1/2¢

B Bait..... 2 1/2¢

Competitor Bait..... 2 1/2¢

Balances—Sash—

Caldwell new list..... 50%
Fullman..... 50¢ @ 10¢

Spring—

Spring Balances..... 50 & 10 @ 60 %

Custilson's:

Light Spg. Balances..... 50 @ 50 & 10 %

Straight Balances..... 40 @ 40 & 10 %

Circular Balances..... 50 @ 50 & 10 %

Large Dial..... 30%

Barb Wire—See Wire, Barb.

Bars—Crown—

Steel Crowbars, 10 to 40 lb.

per lb. —@ 2 1/2 @ 3 1/4¢

Towel—

No. 10 Ideal, Nickel Plate, 1/2 gro. \$1.50

Beams, Scale—

Scale Beams..... 40%

Chattillon's No. 1..... 30%

Chattillon's No. 2..... 40%

Beaters, Carpet—

Holt-Lyon Co.:

No. 12 Wire Coppered 1/2 doz. \$0.80;

Tinned..... \$0.85

No. 14 Wire Coppered 1/2 doz. \$1.15;

Tinned..... \$1.20

No. 16 Wire Tinned..... 1/2 doz. \$1.50

Beaters, Egg—

Holt-Lyon Co.:

No. 12, per doz., No. 5, Jap'd., \$0.80;

No. A, Jap'd., \$1.15; No. B, Jap'd., \$1.85;

No. 6, Jap'd., \$1.65.

Lyon, Jap'd., per doz., No. 2..... \$1.35.

Taplin Mfg. Co.:

Improved Dover, per gro., No. 60,

No. 75, \$6.50; No. 100, \$7.00;

No. 102, Tin'd., \$8.50; No. 152, Hotel

Tin'd., \$15.00; No. 200, Tumbler

\$8.50; No. 300, Mammoth, per

doz., \$25.00.

Terner & Seymour Mfg. Co.:

T. & S. Dover..... \$6.50

Bellows—

Blacksmith, Standard List.

Split Leather..... 60 & 65 @ 65 %

Grain Leather..... 50 @ 50 & 10 %

Hand—

Inch..... 6 7 8 9 10

Doz. \$5.00 5.50 6.00 6.50 7.50

Molders—

Inch..... 10 12 14 16

Doz. \$7.50 9.00 12.00 15.00

Bells—Cow—

Ordinary Goods..... 75 @ 75 & 10 @ 10 %

High grade..... 70 & 10 @ 75 %

Jersey..... 75 @ 75 & 10 @ 10 %

Texas Star..... 50%

Door—

Home, R. & E. Mfg. Co.'s..... 55 @ 50%

Door—

Ives' Patent Door..... 35 @ 45%

Ives' Wrought Metal..... 45%

Hand—

Polished, Brass..... 50 @ 50 & 10 %

White Metal..... 50 @ 50 & 5%

Nickel Plated..... 50%

Silver..... 50%

Coue's Globe Hand Bells..... 35 @ 35 %

Miscellaneous—

Farm Bells..... 1 lb. 2 1/2 @ 2 1/2¢

Church and School..... 60 @ 60 & 5%

Belting—Leather—

Extra Heavy, Short Lap..... 60 & 5%

Regular Short Lap..... 60 @ 60 & 5%

Standard..... 70 @ 70 & 5%

Light Standard..... 75 @ 75 & 5%

Cut Leather Lacing..... 40 @ 40 & 5%

Leather Lacing Sides, per sq. ft. 2 1/2¢

Rubber—

Agricultural (Low Grade)..... 75 @ 75 & 5%

Common Standard..... 70 @ 70 & 10 %

Standard..... 70 @ 70 & 5%

Extra Heavy, Short Lap..... 80 @ 80 & 10 %

Standard..... 80 @ 80 & 5%

High Grade..... 80 @ 80 & 10 %

Bench Stops—

See Stops, Bench

Benders and Upsetters—

Tire—

Green River Tire Benders and Upsetters..... 20 %

Dicycle Goods—

John S. Leng's Son & Co.'s 1907 list:

Chain, Parts, Spokes..... 50%

Tubes..... 50%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

Blocks—Tackle—

Common Wooden..... 75¢

B. & L. B. Co.:

Boston Wood Snatch, 30%; Eclipse

Steel, 75%; Hollow Steel, 50 & 10 %;

Star Wire Rope, 50%; Tarbox Metal

Snatch, 50%; Tarbox, New Style

Steel, 50 & 10%; Wire Rope Snatch,

50%, Lane's Patent Automatic Lock and

Junior..... 30%

See also Machines, Hoisting.

Boards, Stove—

Paper and Wood Lined..... 40%

Embossed..... 50%

Boards, Wash—

See Washboards.

Bobs, Plumb—

Keuftell & Easer Co. 38 1/2¢

Beats—

Carriage, Machine, &c.—

Common Carriage (cut thread):

1/4 x 6 and smaller..... 70 & 5 @ 5%

Larger and longer..... 65 @ 6%

Philadelphia, \$1.00 list..... 80 @ 80

Bolt Ends..... 65 @ 5 @ 5

Machine (Cut Thread):

3/4 x 4 and smaller..... 70 & 7 1/2 @ 5%

Larger and longer..... 65 @ 5 @ 5

Door and Shutter—

Cast Iron Barrel, Japanned,

Round Brass Knob:

Inch..... 3 4 5 6 8 8

Per doz. 40.30 .35 .45 .60 .80

Cast Iron Spring Foot, Jap'd:

Inch..... 6 8 10

Cages, Bird—

Hendryx Brass; Series 3000, 5000, 1100, net list; 120, 15%; 30, 30, 900, 30%
Hendryx Bronze; Series 700, 800, 30%
Hendryx Enamored, 35%

Calipers—See Compasses.**Calks, Toe and Heel—**

Blunt, 1 prong, per lb., 4½@4½¢
Sharp, 1 prong, per lb., 4½@5½¢
Burke's, Blunt, 4½@4½¢; Sharp, 4½@5½¢
Lautier, Blunt, 4½@4½¢; Sharp, 4½@4½¢
Perkins', Blunt, 4½¢; Sharp, 4½¢

Can Openers—**See Openers, Can.****Caps, Percussion—**

Eley's B. B. 52@55¢
G. per M 54@55¢
F. L. per M 40@42¢
G. E. per M 45@48¢
Musket per M 68@68¢

Primers—

Berdan Primers, \$2 per M. 20d5%
Primer Shells and Bullets, 15d@10%
All other primers per M. \$1.52@1.60

Carpet Stretchers—**See Stretchers, Carpet.****Cartridges—**

Blank Cartridges:
32 C. F., \$5.50 10d5%
38 C. F., \$7.00 10d5%
22 cal, Rim, \$1.50 10d5%
32 cal, Rim, \$2.75 10d5%
B. B. Caps, Con. Ball, Sycd. \$1.90
B. B. Caps, Round Ball \$1.49
Central Fire 25%
Target and Sporting Rifle, 15d5%
Primed Shells and Bullets, 15d@10%
Rim Fire, Sporting 50%
Rim Fire, Military 15d5%
Casters—
Bed 65d@10%
Plate 60d@5%
Philadelphia 70d@10%
Acme, Ball Bearing 35%
Gem (Koller Bearing) 70d@10&10%
Steel Gem 20%
Standard Ball Bearing 45%
Yale (Double Wheel) low list. 40d@10%
Cattle Leaders—
See Leaders, Cattle.

Chain, Proof Coil—

American Coil, Straight Link:
3-16 1/4 5-16 3/4 7-16 1/2 9-16
38.77 6.17 5.02 4.57 4.37 4.27 4.22
3/4 3/4 2 to 1 1/2 to 1 1/4 inch.
\$4.17 4.07 4.02 4.12
In case lots, deduct 25%.

German Coil:

6-9 to 1 70d5@70d@10%
2 and 3. 60d@10d@10@60d@10d@5%
4, 5 and 6. 50d@10@5d@10d@5%

Halter—

Halter Chains 60@60d5%
German Pattern Halter Chains,
list July 24, '97 60d@10d5%
Covert Mfg. Co.,
Halter 35d5%

Cow Ties—**See Halters and Ties.****Trace, Wagon, &c.—**

Traces, Western Standard: 100 pr.
6½-6-3, Straight, with ring, \$28.00
6½-6-2, Straight, with ring, \$29.00
6½-8-2, Straight, with ring, \$32.00
6½-10-2, Straight, with ring, \$37.00

NOTE—Add 2¢ per pair for Hooks.
Twist Traces; add per pair for Nos. 2 and 3, 2c; No. 1, 8c; No. 4, to price of
Straight Link.

Eastern Standard Traces, Wag-
on Chain, &c. 60d@10@60d@10d5%

Miscellaneous—

Jack Chain, list July 10, '93.
Iron 60d@10%
Brass 80%
Safety and Plumbers' Chain, 60d@10%

Gal. Pump Chain ... lb. 4½@4½%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stal-
lion 40%

Oneida Community:
American Halter, Dog and Kennel
Chains 35d@2½@40%
Niagara Dog Leads and Kennel
Chains 45d@5d5%

Wire Goods Co.:
Dog Chain 70%
Universal Dbl.-Jointed Chain 50%

Chain and Ribbon, Sash—

Oneida Community:
Steel Chain 60%
Pullman: Bronze Chain, 60%; Steel Chain
60d@10%
Sash Chain Attachments, per set, 8¢
Aluminoy Sash Ribbon, per 100
ft. \$1.25@33¢
Sash Ribbon Attachments, per set, 8¢

Chalk—(From Jobbers)

Carpenters' Blue ... gro. 50@55¢
Carpenters' Red ... gro. 45@50¢
Carpenters' White ... gro. 40@45¢

Checks, Door—

Bardsley's 45%
Pullman, per gro. 25¢.00
Russwin 33d5%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools 50%
Youths' Chests, with Tools 35%
Gentlemen's Chests, w/ Tools 25%
Farmers', Carpenters', etc., Chests,
with Tools 25%
Machinists and Pipe Fitters'
Chests, Empty 45%
Tool Cabinets 45%
C. E. Jennings & Co.'s Machinists'
Tool Chests 7½%

Chisels—

Socket Framing and Firmer
Standard List 75d@10%@

Rock Bits 30%

C. E. Jennings & Co.:
Socket Firmer No. 10 25@7½%

Socket Framing No. 15 25@7½%

Swan's 60d@7½%

L. & I. J. White Co. 30d@30d@5%

Tanged—

Tanged Firmer 30d@5@5%

Buck Bros. 25d@5@5%

C. E. Jennings & Co. Nos. 191, 192, 25d@5@5%

L. & I. J. White Co. 35d@5%

Cold— 1b.

Cold Chisels, good quality, 15d@15¢

Cold Chisels, fair quality, 11d@11¢

Cold Chisels, ordinary, 9d@10¢

Chucks—

Almond Drill Chucks 35%

Almond Turret Six-Tool Chuck 40%

Empire 25%

Blacksmiths 25%

Jacobs' Drill Chucks 35%

Pratt's Positive Drive 25%

Stevens' Patent Chuck 25%

Independent Lathe Chucks 35%

Universal Reversible Jaws 35%

Combination Reversible Jaws 35%

Drill Chucks, New Model, 25%

Standard, 45%; Skinner Pat., 25%; Positive Drive, 40%

Planer Chucks 30%

Face Plate Jaws 35%

Standard Tool Co.: Improved Drill Chuck 45%

Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21, 35%

Scroll Combination, Nos. 83 and 84 30%

Geared Scroll, Nos. 33, 34 and 35, 25%

Independent Iron, Nos. 18 and 318, 35%

Independent Steel, No. 64 25%

Union Drill, Nos. 00, 00, 100, 101, 102, 103, 104 35%

Union Czar Drill 25%

Universal, 11, 12, 16, 17, 13, 14, 15, 40%

Universal, No. 42 35%

Iron Face Plate Jaws, Nos. 28, 30, 48 and 50 35%

Steel Face Plate Jaws, Nos. 78 and 72 30%

Westcott Patent Chucks:

Lathe Chucks 50%

Little Giant Auxiliary Drill 50%

Little Giant Double Grip Drill 50%

Little Giant Drill, Improved 50%

Oneida Drill 50%

Scoll Combination Lathe 50%

Clamps—

Adjustable, Hammers 20@20d5%

Carriage Makers', P. S. & W. Co. 50d@10%

Besly, Parallel 33d5%

Myers, Hay Rack 45%

Lineman's Swedish Neverturn 65%

Wood Workers, Hammers 40d@10%

Saw Clamps, see Vises, Saw Filers.

Cleavers, Butchers'—

Foster Bros. 30%

Fayette R. Plumb. 30%

L. & I. J. White Co. 30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Company:

1902 Chicago Horse, each, \$10.75

20th Century Horse, each, \$5.00

Lightning Belt Horse, each, \$15.00

Chicago Belt Horse, each, \$20.00

Stewart's Enclosed Gear Horse, each \$7.75

Stewart's Patent Sheep Shearing Machine, each \$12.75

Stewart Enclosed Gear Shearing Machine, No. 8, each, \$9.75

Clothes, Drain—

Iwan's Champion, Adjustable 50%

Iwan's Champion, Stationary 40%

Cleaners, Drain—

W. C. L. Champion, Adjustable 50%

W. C. L. Champion, Stationary 40%

Cladings, Metal—

International Silver Company:

No. 12 M'dn Knives, 1817, 30 doz. \$3.50

Star, Eagle, Rogers & Hamilton and Anchor 30 doz. \$3.00

Wm. Rogers & Son, 30 doz. \$2.50

Clothes, Wash—

P. S. & W. Co. 50%

Clothespins—

Victor Garden 50%

Clothing, Wash—

International Silver Company:

No. 12 M'dn Knives, 1817, 30 doz. \$3.50

Star, Eagle, Rogers & Hamilton and Anchor 30 doz. \$3.00

Wm. Rogers & Son, 30 doz. \$2.50

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

P. S. & W. Co. 50%

Clothing, Wash—

Extractors, Lemon Juice—See *Squeezers, Lemon.***Fasteners, Blind**Zimmerman's 50¢ & 10%
Wing 30¢ & 10%
Upon's Patent 40%**Cord and Weight**

Ives and Titan 33½%

FaucetsCork Lined 50¢ & 10@60%
Acidic Acy, Leather Lined 60¢ & 10@70%
Red Cedar 40¢ & 10@40¢ & 10%
Petroleum 70¢ & 10@75%B. & L. B. Co.: Metal Key 60¢ & 10%
Star 50¢ & 10%
West Lock 50¢ & 10%
John Sommer's Peering Tin Key 50¢
John Sommer's T. T. Key 50¢
John Sommer's Victor Mtl. Key 50¢ & 10%
John Sommer's Duplex Metal Key 60¢
John Sommer's Diamond Lock 40¢
John Sommer's I. X. L. Cork Lined 50¢
John Sommer's Reliable Cork Lined 50¢ & 10%
John Sommer's Chicago Cork Lined 60¢
John Sommer's O. K. Cork Lined 50¢
John Sommer's No Brand, Cedar 50¢
John Sommer's Perfection, Cedar 40¢
Self Measuring: Enterprise, per doz. \$36.00 40¢ & 10%
Lane's, per doz. \$36.00 40¢ & 10%
National Measuring, per doz. \$36.00 & 10%**Feloe Plates**See *Plates, Feloe.***Files— Domestic**List Nov. 1, 1899.
Best Brands 70¢ & 10@75¢ & 10%
Standard Prands 75¢ & 10@80%
Lower Grade 75¢ & 10@10@80¢ & 10%**Imported**

Stub's Tapers, Stub's list, July 24, '97 35¢ & 10@40%

Fixtures, Fire DoorAllith Underwriters' Approved 50%
Leverett Mfg. Co.: Universal, No. 103; Special, No. 104 43.75
Fusible Links, No. 96 50¢
Expansion Bolts, No. 107 60¢ & 10%**Grindstone**Net Prices:
Inch 15 17 19 21
Per doz. \$3.60 3.85 4.15 4.65
P. & W. Co. 25%
Reeds, Hardware Co. 60%**Fodder Squeezers**See *Compressors.***Forks**

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Ezy Potato 60¢ & 10%
Victor Hay 60¢ & 15@2%
Victor Manure 66¢
Victor Header 65¢
Champion Hay 66¢
Champion Manure 60¢ & 15@2%
Columbia Hay 60¢ & 20%
Columbia Manure 70¢
Columbia Spading 70¢ & 12%
Hawkeye Wood Barley 40¢
W. & C. Potato Digger 60¢ & 10%
Acme Hay 60¢ & 20%
Acme Manure, 4 tine 60¢ & 10@2%
Dakota Header 60¢ & 20%
Jackson Steel Barley 60¢ & 20%
Kansas Header 65¢
W. & C. Favorite Wood Barley 40¢
Plated.—See Spoons.**Frames— Wood Saw**White, 8'g't Bar, per doz. 75¢ @ 80%
Red, 8'g't Bar, per doz. \$1.00 @ 1.25
Red, Dbl. Brace, per doz. \$1.40 @ 1.50**Freezers, Ice Cream**Qt. 1 2 3 4 6
Each \$1.25 \$1.60 \$1.90 \$2.20 \$2.80**Fruit and Jelly Presses**See *Presses, Fruit and Jelly.***F. Pans— See Pans, Fry.****Fuse— Per 1000 Feet.**Hemp 32¢
Cotton 32¢
Waterproof Sgl. Taped 3.65
Waterproof Dbl. Taped 4.40
Waterproof Tpl. Taped 5.15**Gates, Molasses and Oil**

Stubbins' Pattern 75@80%

GaugesMarking, Mortise, &c. 50@50¢ & 10%
—Stephens Co.:
Marking, Mortise, &c. 50@50¢ & 10%
Dixton's Marking, Mortise, &c. 87½%
Wire, Brown & Sharpe's 33½%
W. Morse's 25%
Wire, P. & W. Co. 33½%**Gimlets— Single Cut**

Numbered assortments, per gross.

Nail, Metal, No. 1, \$2.00; 2, \$2.30

Spike, Metal, No. 1, \$4.00; 2, \$4.30

Nail, Wood Handled, No. 1, \$2.80; 2, \$2.60

Spike, Wood Handled, No. 1, \$1.50; 2, \$1.60

Glass, American WindowSee *Trade Report.***Glasses, Level**

Chapin-Stephens Co. 65@65¢ & 10%

Glue, Liquid Fish

Bottles or Cans, with Brush.

25¢ & 10@50%

Elwell's 40%

Grease, Axle

Common Grade gro. \$6.00 @ 6.50

Dixon's Everlasting, 10-lb pails, ea.

8¢; in boxes, 40¢ doz., 1 lb. \$1.20;

2 lb. \$2.00

Helmet Hard Oil 25¢

Girdles, Soapstone

Pike Mfg. Co. 33½@33½¢ & 10%

Grinders

Royal Mfg. Co.:

Alundum Grinding Machines, each, Nos. 01, \$1.75; 1A, \$2.50; 10,

50 \$5.00

Alundum Sickle Grinders, each,

Nos. 20, \$5.00; 20A, \$6.00; 20A

Combined, \$6.50 30¢

Alundum Disc Grinders, each,

\$2.50 30¢

Grindstones

Pike Mfg. Co.:

Improved Family Grindstones, 3½

inch, 40¢ doz., \$2.00 33½¢

Richards Mfg. Co., Eli and Cycle,

Ball Bearing, mounted 40¢

Grips, Nipple

Perfect Nipple Grips 40¢ & 10¢ & 2%

Halters and Ties

Cow Ties 60¢ & 50@60¢ & 10%

Covert Mfg. Co.:

Web 30¢ & 2%

Jute Rope 35¢

Sisal Rope 20¢

Cotton Rope 45¢

Hemp Rope 45¢

Oneida Community:

Am. Coil and Halters 40¢ & 45¢ & 10%

Am. Cow Ties 45¢ & 50%

Niagara Coil and Halters 45¢ & 50¢ & 10%

Niagara Cow Ties 45¢ & 50¢ & 10%

Hammers**Handled Hammers**

Beller's Machinists' 55¢ & 10¢ & 55¢ & 10¢ & 5%

Heller's Farrières' Co. 40¢ & 45¢ & 10¢ & 5%

Peck, Stow & Wilcox Co.:

Crucible Steel 50¢

Farrières' 40¢ & 10¢ & 5%

Riveting 50¢

Machinists', revised list 66¢ & 5%

Blacksmiths' 50¢ & 5%

Fayette R. Plumb:

A. E. Nail 40¢ & 2½@40¢ & 12½%

Eng. and B. S. Hand 50¢ & 10¢ & 60¢ & 5%

Machinists' Hammers 60¢ & 60¢ & 10%

Rivet and Timmers' 40¢ & 7½@40¢ & 12½ & 5%

Heavy Hammers and Sledges

Under 3 lb., per lb., 50¢ 80¢ & 5@—%

3 to 5 lb., per lb., 40¢ 80¢ 50¢ & —%

Over 5 lb., per lb., 30¢ 80¢ 10¢ & 5@—%

Wilkinson's Smithie' 10¢ 20¢ & 10¢

Handles**Agricultural Tool Handles**

Aldis, Pick, &c. 60¢ & 10@160¢ & 105%

Hot, Rake, &c. 40%

Fork, Shorel, Spade, &c.:

Long Handles 40%

D Handles 40%

Cross-Cut Saw Handles

Atkins 40%

Champion 50%

Dissot's 50%

Mechanics' Tool Handles

Auger, assorted gro. \$3.00 @ \$3.50

Brad Awl gro. \$1.65 @ \$1.75

Chisel Handles, Ass'd, per gro.:

Tanged Firmer, Apple, \$2.40 @ \$2.65; Hickory, \$2.15 @ \$2.40

Socket Firming, Apple, \$1.75 @ \$1.95; Hickory, \$1.60 @ \$1.75

Socket Framing, Hickory, \$1.60 @ \$1.75

File, assorted gro. \$1.30 @ \$1.40

Hammer, Hatchet, &c. 60¢ & 10@60¢ & 105%

Hand Saw, Varnished, doz. 80¢ & 85¢; Not Varnished 65¢ @ 75¢

Plane Handles:

Jack, doz. 50¢; Jack, Bolted 75¢

Fore, doz. 45¢; Fore, Bolted 90¢

THE IRON AGE		1519
D. & H. Scovil.....	27%	
Am. Forc. & Hoe Co. (Scovil Pat- tern) .....	.60%	
Handled—		
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of Au- gust 1, 1899, or setting at net prices.		
Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50		
Star Double Bit.....	.43%	
Ft. Madison Cotton Hoe.....	70¢ to 10¢	
Ft. Madison Crescent Cultivator Hoe, # doz.....	70¢ to 10¢	
Ft. Madison Mattock Hoes:		
Regular Weight.....	\$1 doz. 40¢ to 55¢	
Junior Size.....	\$1 doz. 40¢ to 44¢	
Ft. Madison Sprouting Hoe, # doz.....	60¢ to 10¢	
Ft. Madison Dixie Tobacco Hoe.....	75¢ to 10¢	
Kretzsinger's Cut Easy.....	70¢ to 10¢	
Warren Hoe.....	45¢ to 10¢	
W. C. Ivanhoe.....	75¢ to 2¢	
B. B. 6 in. Cultivator Hoe.....	\$3.40	
B. B., 6½ in.	\$3.50	
Ame Wedding.....	\$1 doz. net, 4.35	
W. C. & L'ning Shuffle Hoe, # doz.....	\$5.25	
Hoisting Apparatus—		
See Machines, Hoisting.		
Holders—Bit—		
Angular, # doz. \$24.00.....	45¢ to 10¢	
Door—		
Bardsley's, Iron, 40%; Brass and Bronze.....	25¢ to 50¢	
Empire.....	50¢	
Pullman.....	35¢	
Richards Mfg. Co.: No. 117, Ever- ready, 40%; Nos. 118, 119, Sure Grip.....	50¢	
Superior.....	33¢ to 34¢	
File and Tool—		
Nicholson File Holders and File Handles.....	33¢ to 40¢	
Fruit Jar—		
Triumph Fruit Jar Holder, # gross, \$10.80; # doz.....	\$1.25	
Trace and Rein—		
Fernald Double Trace Holder, # doz, pairs.....	\$1.25	
Dash Rein Holder, # doz. pairs. \$1.25		
Hones—Razor—		
Pike Mfg. Co., Belgian and Swaty, 50%; German.....	33¢ to 34¢	
Hooks—Cast Iron—		
Bird Cage, Reading.....	40¢	
Clothes Line, Reading List.....	40¢	
Coat and Hat, Reading.....	65¢ to 25¢	
Coat and Hat, Wrightsville.....	60¢ to 25¢	
Harness, Reading List.....	40¢	
Wire—		
Belt.....	80¢	
Wire U. & H. Hooks.....	75¢ to 10¢	
Bradley Metal Clasp Wire, Coat and Hat, 70¢ to 10¢; Ceiling.....	70¢ to 10¢	
Columbian Hdw. Co., Gem.....	70¢ to 5¢	
Parker Wire Goods Co., King, 70¢ to 10¢		
Wire Goods Co.:		
Acme, 60¢ to 10¢; Chief, 70¢; Crown, 75¢; Czar, 65¢; V, Brace, 75¢;		
Czar Harness, 50¢ to 10¢.		
Wrought Iron—		
Box, 6 in., per doz., \$1.90; 8 in., \$1.25; 10 in., \$2.50.		
Cotton.....	# doz. \$1.05 to \$1.25	
Wrought Staples, Hooks, &c.—		
See Wrought Goods.		
Miscellaneous—		
Hooks, Bench, see Stops, Bench.		
Bush, Light, doz., \$6.20; Medium, \$6.75; Heavy, \$7.65		
Grass, best, all sizes, per doz. \$3.00		
Grass, common grades, all sizes, per doz.....	\$1.50	
Whaletree.....	lb. 5¢ to 8¢	
Hooks and Eyes:		
Brass.....	80¢ to 10¢	
Malleable Iron.....	70¢ to 10¢ to 10%	
Cover'd Mfg. Co. Gate and Scuttle Hooks.....	40¢ to 10¢	
Ft. Madison Cut-Easy Corn Hooks, # doz. \$3.25 net		
Turner & Stanton Co. Cup and Shoulder.....	80¢ to 10¢	
Bench Hooks—See Bench Stops,		
Corn Hooks—See Knives, Corn.		
Horse Nails—		
See Nails, Horse.		
Horseshoes—		
See Shoes, Horses.		
Hose—Rubber—		
Garden Hose, ½-inch:		
Competition.....	ft. 5@ 6¢	
3-ply Guaranteed.....	ft. 8@ 9¢	
4-ply Guaranteed.....	ft. 10@ 11¢	
Cotton Garden, ½-in., coupled:		
Low Grade.....	ft. 8@ 9¢	
Fair Quality.....	ft. 10@ 11¢	
Irons— Sad—		
From ½ to 10.....	lb. 3@ 3¢ to 4¢	
B. B. Sad Irons.....	lb. 3½@ 3½¢	
Mrs. Potts', cents per set:		
No. 55 .55 .60 .65		
Jap'd Tops.....	83 89 93 91	
Tin'd Tops.....	88 85 98 95	
New England Pressing, lb. 3½@ 4¢		
Bar and Corner—		
Richards Mfg. Co., Bar, 60¢ to 10¢;		
Corner.....	60¢	
Pinking—		
Pinking Irons.....	# doz. 60¢	
Irons, Soldering		
See Copiers.		
Jacks, Wagon—		
Cover'd Mfg. Co.:		
Auto Screw.....	30¢ to 5¢; Steel, 45¢	
Lockport.....	50¢	
Handled—		
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of Au- gust 1, 1899, or setting at net prices.		
Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50		
Star Double Bit.....	.43%	
Ft. Madison Cotton Hoe.....	70¢ to 10¢	
Ft. Madison Crescent Cultivator Hoe, # doz.....	70¢ to 10¢	
Ft. Madison Mattock Hoes:		
Regular Weight.....	# doz. 40¢ to 55¢	
Junior Size.....	# doz. 40¢ to 44¢	
Ft. Madison Sprouting Hoe, # doz.....	60¢ to 10¢	
Ft. Madison Dixie Tobacco Hoe.....	75¢ to 10¢	
Kretzsinger's Cut Easy.....	70¢ to 10¢	
Warren Hoe.....	45¢ to 10¢	
W. C. Ivanhoe.....	75¢ to 2¢	
B. B. 6 in. Cultivator Hoe.....	\$3.40	
B. B., 6½ in.	\$3.50	
Ame Wedding.....	\$1 doz. net, 4.35	
W. C. & L'ning Shuffle Hoe, # doz.....	\$5.25	
Hoisting Apparatus—		
See Machines, Hoisting.		
Holders— Bit—		
Angular, # doz. \$24.00.....	45¢ to 10¢	
Door—		
Bardsley's, Iron, 40%; Brass and Bronze.....	25¢ to 50¢	
Empire.....	50¢	
Pullman.....	35¢	
Richards Mfg. Co.: No. 117, Ever- ready, 40%; Nos. 118, 119, Sure Grip.....	50¢	
Superior.....	33¢ to 34¢	
File and Tool—		
Nicholson File Holders and File Handles.....	33¢ to 40¢	
Fruit Jar—		
Triumph Fruit Jar Holder, # gross, \$10.80; # doz.....	\$1.25	
Trace and Rein—		
Fernald Double Trace Holder, # doz, pairs.....	\$1.25	
Dash Rein Holder, # doz. pairs. \$1.25		
Hones—Razor—		
Pike Mfg. Co., Belgian and Swaty, 50%; German.....	33¢ to 34¢	
Hooks—Cast Iron—		
Bird Cage, Reading.....	40¢	
Clothes Line, Reading List.....	40¢	
Coat and Hat, Reading.....	65¢ to 25¢	
Coat and Hat, Wrightsville.....	60¢ to 25¢	
Harness, Reading List.....	40¢	
Wire—		
Belt.....	80¢	
Wire U. & H. Hooks.....	75¢ to 10¢	
Bradley Metal Clasp Wire, Coat and Hat, 70¢ to 10¢; Ceiling.....	70¢ to 10¢	
Columbian Hdw. Co., Gem.....	70¢ to 5¢	
Parker Wire Goods Co., King, 70¢ to 10¢		
Wire Goods Co.:		
Acme, 60¢ to 10¢; Chief, 70¢; Crown, 75¢; Czar, 65¢; V, Brace, 75¢;		
Czar Harness, 50¢ to 10¢.		
Wrought Iron—		
Box, 6 in., per doz., \$1.90; 8 in., \$1.25; 10 in., \$2.50.		
Cotton.....	# doz. \$1.05 to \$1.25	
Wrought Staples, Hooks, &c.—		
See Wrought Goods.		
Miscellaneous—		
Hooks, Bench, see Stops, Bench.		
Bush, Light, doz., \$6.20; Medium, \$6.75; Heavy, \$7.65		
Grass, best, all sizes, per doz. \$3.00		
Grass, common grades, all sizes, per doz.....	\$1.50	
Whaletree.....	lb. 5¢ to 8¢	
Hooks and Eyes:		
Brass.....	80¢ to 10¢	
Malleable Iron.....	70¢ to 10¢ to 10%	
Cover'd Mfg. Co. Gate and Scuttle Hooks.....	40¢ to 10¢	
Ft. Madison Cut-Easy Corn Hooks, # doz. \$3.25 net		
Turner & Stanton Co. Cup and Shoulder.....	80¢ to 10¢	
Bench Hooks—See Bench Stops,		
Corn Hooks—See Knives, Corn.		
Horse Nails—		
See Nails, Horse.		
Horseshoes—		
See Shoes, Horses.		
Hose—Rubber—		
Garden Hose, ½-inch:		
Competition.....	ft. 5@ 6¢	
3-ply Guaranteed.....	ft. 8@ 9¢	
4-ply Guaranteed.....	ft. 10@ 11¢	
Cotton Garden, ½-in., coupled:		
Low Grade.....	ft. 8@ 9¢	
Fair Quality.....	ft. 10@ 11¢	
Irons— Sad—		
From ½ to 10.....	lb. 3@ 3¢ to 4¢	
B. B. Sad Irons.....	lb. 3½@ 3½¢	
Mrs. Potts', cents per set:		
No. 55 .55 .60 .65		
Jap'd Tops.....	83 89 93 91	
Tin'd Tops.....	88 85 98 95	
New England Pressing, lb. 3½@ 4¢		
Bar and Corner—		
Richards Mfg. Co., Bar, 60¢ to 10¢;		
Corner.....	60¢	
Pinking—		
Pinking Irons.....	# doz. 60¢	
Irons, Soldering		
See Copiers.		
Jacks, Wagon—		
Cover'd Mfg. Co.:		
Auto Screw.....	30¢ to 5¢; Steel, 45¢	
Lockport.....	50¢	
Handled—		
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of Au- gust 1, 1899, or setting at net prices.		
Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50		
Star Double Bit.....	.43%	
Ft. Madison Cotton Hoe.....	70¢ to 10¢	
Ft. Madison Crescent Cultivator Hoe, # doz.....	70¢ to 10¢	
Ft. Madison Mattock Hoes:		
Regular Weight.....	# doz. 40¢ to 55¢	
Junior Size.....	# doz. 40¢ to 44¢	
Ft. Madison Sprouting Hoe, # doz.....	60¢ to 10¢	
Ft. Madison Dixie Tobacco Hoe.....	75¢ to 10¢	
Kretzsinger's Cut Easy.....	70¢ to 10¢	
Warren Hoe.....	45¢ to 10¢	
W. C. Ivanhoe.....	75¢ to 2¢	
B. B. 6 in. Cultivator Hoe.....	\$3.40	
B. B., 6½ in.	\$3.50	
Ame Wedding.....	\$1 doz. net, 4.35	
W. C. & L'ning Shuffle Hoe, # doz.....	\$5.25	
Hoisting Apparatus—		
See Machines, Hoisting.		
Holders— Bit—		
Angular, # doz. \$24.00.....	45¢ to 10¢	
Door—		
Bardsley's, Iron, 40%; Brass and Bronze.....	25¢ to 50¢	
Empire.....	50¢	
Pullman.....	35¢	
Richards Mfg. Co.: No. 117, Ever- ready, 40%; Nos. 118, 119, Sure Grip.....	50¢	
Superior.....	33¢ to 34¢	
File and Tool—		
Nicholson File Holders and File Handles.....	33¢ to 40¢	
Fruit Jar—		
Triumph Fruit Jar Holder, # gross, \$10.80; # doz.....	\$1.25	
Trace and Rein—		
Fernald Double Trace Holder, # doz, pairs.....	\$1.25	
Dash Rein Holder, # doz. pairs. \$1.25		
Hones—Razor—		
Pike Mfg. Co., Belgian and Swaty, 50%; German.....	33¢ to 34¢	
Hooks—Cast Iron—		
Bird Cage, Reading.....	40¢	
Clothes Line, Reading List.....	40¢	
Coat and Hat, Reading.....	65¢ to 25¢	
Coat and Hat, Wrightsville.....	60¢ to 25¢	
Harness, Reading List.....	40¢	
Wire—		
Belt.....	80¢	
Wire U. & H. Hooks.....	75¢ to 10¢	
Bradley Metal Clasp Wire, Coat and Hat, 70¢ to 10¢; Ceiling.....	70¢ to 10¢	
Columbian Hdw. Co., Gem.....	70¢ to 5¢	
Parker Wire Goods Co., King, 70¢ to 10¢		
Wire Goods Co.:		
Acme, 60¢ to 10¢; Chief, 70¢; Crown, 75¢; Czar, 65¢; V, Brace, 75¢;		
Czar Harness, 50¢ to 10¢.		
Wrought Iron—		
Box, 6 in., per doz., \$1.90; 8 in., \$1.25; 10 in., \$2.50.		
Cotton.....	# doz. \$1.05 to \$1.25	
Wrought Staples, Hooks, &c.—		
See Wrought Goods.		
Miscellaneous—		
Hooks, Bench, see Stops, Bench.		
Bush, Light, doz., \$6.20; Medium, \$6.75; Heavy, \$7.65		
Grass, best, all sizes, per doz. \$3.00		
Grass, common grades, all sizes, per doz.....	\$1.50	
Whaletree.....	lb. 5¢ to 8¢	
Hooks and Eyes:		
Brass.....	80¢ to 10¢	
Malleable Iron.....	70¢ to 10¢ to 10%	
Cover'd Mfg. Co. Gate and Scuttle Hooks.....	40¢ to 10¢	
Ft. Madison Cut-Easy Corn Hooks, # doz. \$3.25 net		
Turner & Stanton Co. Cup and Shoulder.....	80¢ to 10¢	
Bench Hooks—See Bench Stops,		
Corn Hooks—See Knives, Corn.		
Horse Nails—		
See Nails, Horse.		
Horseshoes—		
See Shoes, Horses.		
Hose—Rubber—		
Garden Hose, ½-inch:		
Competition.....	ft. 5@ 6¢	
3-ply Guaranteed.....	ft. 8@ 9¢	
4-ply Guaranteed.....	ft. 10@ 11¢	
Cotton Garden, ½-in., coupled:		
Low Grade.....	ft. 8@ 9¢	
Fair Quality.....	ft. 10@ 11¢	
Irons— Sad—		
From ½ to 10.....	lb. 3@ 3¢ to 4¢	
B. B. Sad Irons.....	lb. 3½@ 3½¢	
Mrs. Potts', cents per set:		
No. 55 .55 .60 .65		
Jap'd Tops.....	83 89 93 91	
Tin'd Tops.....	88 85 98 95	
New England Pressing, lb. 3½@ 4¢		
Bar and Corner—		
Richards Mfg. Co., Bar, 60¢ to 10¢;		
Corner.....	60¢	
Pinking—		
Pinking Irons.....	# doz. 60¢	
Irons, Soldering		
See Copiers.		
Jacks, Wagon—		
Cover'd Mfg. Co.:		
Auto Screw.....	30¢ to 5¢; Steel, 45¢	
Lockport.....	50¢	
Handled—		
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of Au- gust 1, 1899, or setting at net prices.		
Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50		
Star Double Bit.....	.43%	
Ft. Madison Cotton Hoe.....	70¢ to 10¢	
Ft. Madison Crescent Cultivator Hoe, # doz.....	70¢ to 10¢	
Ft. Madison Mattock Hoes:		
Regular Weight.....	# doz. 40¢ to 55¢	
Junior Size.....	# doz. 40¢ to 44¢	
Ft. Madison Sprouting Hoe, # doz.....	60¢ to 10¢	
Ft. Madison Dixie Tobacco Hoe.....	75¢ to 10¢	
Kretzsinger's Cut Easy.....	70¢ to 10¢	
Warren Hoe.....	45¢ to 10¢	
W. C. Ivanhoe.....	75¢ to 2¢	
B. B. 6 in. Cultivator Hoe.....	\$3.40	
B. B., 6½ in.	\$3.50	
Ame Wedding.....	\$1 doz. net, 4.35	
W. C. & L'ning Shuffle Hoe, # doz.....	\$5.25	
Hoisting Apparatus—		
See Machines, Hoisting.		
Holders— Bit—		
Angular, # doz. \$24.00.....	45¢ to 10¢	
Door—		
Bardsley's, Iron, 40%; Brass and Bronze.....	25¢ to 50¢	
Empire.....	50¢	
Pullman.....	35¢	
Richards Mfg. Co.: No. 117, Ever- ready, 40%; Nos. 118, 119, Sure Grip.....	50¢	
Superior.....	33¢ to 34¢	
File and Tool—		
Nicholson File Holders and File Handles.....	33¢ to 40¢	
Fruit Jar—		
Triumph Fruit Jar Holder, # gross, \$10.80; # doz.....	\$1.25	
Trace and Rein—		
Fernald Double Trace Holder, # doz, pairs.....	\$1.25	
Dash Rein Holder, # doz. pairs. \$1.25		
Hones—Razor—		
Pike Mfg. Co., Belgian and Swaty, 50%; German.....	33¢ to 34¢	
Hooks—Cast Iron—		
Bird Cage, Reading.....	40¢	
Clothes Line, Reading List.....	40¢	
Coat and Hat, Reading.....	65¢ to 25¢	
Coat and Hat, Wrightsville.....	60¢ to 25¢	
Harness, Reading List.....	40¢	
Wire—		
Belt.....	80¢	
Wire U. & H. Hooks.....	75¢ to 10¢	
Bradley Metal Clasp Wire, Coat and Hat, 70¢ to 10¢; Ceiling.....	70¢ to 10¢	
Columbian Hdw. Co., Gem.....	70¢ to 5¢	
Parker Wire Goods Co., King, 70¢ to 10¢		
Wire Goods Co.:		
Acme, 60¢ to 10¢; Chief, 70¢; Crown, 75¢; Czar, 65¢; V, Brace, 75¢;		
Czar Harness, 50¢ to 10¢.		
Wrought Iron—		
Box, 6 in., per doz., \$1.90; 8 in., \$1.25; 10 in., \$2.50.		
Cotton.....	# doz. \$1.05 to \$1.25	
Wrought Staples, Hooks, &c.—		
See Wrought Goods.		
Miscellaneous—		
Hooks, Bench, see Stops, Bench.		
Bush, Light, doz., \$6.20; Medium, \$6.75; Heavy, \$7.65		
Grass, best, all sizes, per doz. \$3.00		
Grass, common grades, all sizes, per doz.....	\$1.50	
Whaletree.....	lb. 5¢ to 8¢	
Hooks and Eyes:		
Brass.....	80¢ to 10¢	
Malleable Iron.....	70¢ to 10¢ to 10%	
Cover'd Mfg. Co. Gate and Scuttle Hooks.....	40¢ to 10¢	
Ft. Madison Cut-Easy Corn Hooks, # doz. \$3.25 net		
Turner & Stanton Co. Cup and Shoulder.....	80¢ to 10¢</td	

Pinking Irons—

See Irons, Pinking.

Pins, Escutcheon—Brass 50@50&10%
Iron, list Nov. 11, '05 60@60&10%**Pipe, Cast Iron Soil—**Standard, 2-6 in. 60&10@....%
Extra Heavy, 2-6 in. 70&10@....%
Fittings, Standard and Heavy, 75&10@....%**Pipe, Merchant—**Consumers, Carloads.
Steel. Iron.
Bk. Galv. Blk. Galv.
% % % %
1/8 & 1/4 in. ... 64 48 57 41
1/2 in. 66 52 59 41
1/4 in. 68 56 61 49
3/4 to 6 in. 72 62 66 56
7 to 12 in. 69 54 61 46**Pipe, Vitrified Sewer—**Carload lots.
Standard Pipe and Fittings, 5 to 24 in., f.o.b. factory:
First-class 82%
Second-class 85%**Pipe, Stove—**Per 100 joints.
Edwards' Nested: C. L. L. C. L.
5 in., Standard Blue. \$6.25 \$7.25
6 in., Standard Blue. 7.75 8.75
7 in., Standard Blue. 7.75 8.75
8 in., Royal Blue. 7.00 8.00
9 in., Royal Blue. 7.50 8.50
10 in., Royal Blue. 8.50 9.50
Wheeling Corrugating Co.'s Nested:
5 in., Uniform Color. \$6.15 \$7.15
6 in., Uniform Color. 6.65 7.65
7 in., Uniform Color. 7.65 8.65**Planes and Plane Irons—**Wood Planes—
Bench, first qual. 30@30&10%
Bench, second qual. 40@40&10%
Molding 25@25&10%
Chapin-Stephens Co.:
Bench, First Quality 30%
Bench, Second Quality 40%
Molding and Miscellaneous 25%
Toy and German 30%
Union 40%**Iron Planes—**Chaplin's Iron Planes. 50&10%
Union 60%**Plane Irons—**Wood Bench Plane Irons, list Dec. 12, '06. 25%
Rock Bros. 25%
Chapin-Stephens Co. 25%
Union 40%
L. & J. White. 20@25%**Planters, Corn, Hand—**Kohler's Eclipse. 30@30%
Plates—

Felloe lb. 4@4%

Pliers and Nippers—Button Pliers. 75@75&10%
Gas Burner, per doz. 5 in., \$1.25 @ \$1.30; 6 in., \$1.45 @ \$1.50.
Gas Pipe. 7 8 10 12-in. \$2.00 \$2.25 \$2.75 \$3.50

Acme Nippers. 50@5%

Cronk & Carrier Mfg. Co.: American Button. 20% Improved Button. 75&10% Cronk's No. 80 Lineman's. 50% Stub's Pattern. 45% Combination and others. 35% Heller's Farriers' Nippers, Pincers and Tools. 40@5@40@10@5% P. S. & W. Tinner's Cutting Nippers. 10%

Wm. Schollhorn Co.: Bernard, 35%; Elm City, 35%; Paragon, 50%; Lodi, 55% Swedish Side, End and Diagonal Cutting Pliers. 30% Utica Drop Forge & Tool Co.: Pliers and Nippers, all kinds. 50%

Plumbs and Levels—

Chapin-Stephens Co.: Plumbs and Levels. 30@30&10% Chapin's Imp. Brass Cor. 40@40@10% Pocket Levels. 30@30&10% Extension Sights. 30@30&10% Machinists' Levels. 40@40@10% Diston's Plumbs and Levels. 60@60% Diston's Pocket Levels. 60@60% Stanley's Duplex. 50% Woods' Extension. 35%

Points, Glaziers'

Bulk and 1-lb. papers. lb. 9 1/2@

1/2-lb. papers. lb. 10 4@

1/4-lb. papers. lb. 10@4%

Police Goods—

Manufacturers' Lists. 25@25@25%

Tower's 25@25%

Polish—Metal, Etc.—

Prestoline Liquid, No. 1 (4 pt.). 1/2 oz. \$3.00; No. 2 (1 qt.), \$9.00@10%

Prestoline Paste. 50@5%

George William Hoffman: U. S. Metal Polish Paste, 3 oz. boxes, \$1 doz. 50¢; 1/2 pt. gro. \$4.50; 1/2 lb. boxes, \$1 doz. \$2.25; U. S. Liquid, 3 oz. cans, \$1 doz. \$1.25. Barkeepers' Friend Metal Polish, \$1 doz. \$1.75.

Stove—

Black Eagle Benzine Paste, 5 lb. cans, \$1 doz. 10¢

Black Eagle, Liquid, 5 pt. cans, \$1 doz. 75¢

Black Jack Paste, 5 lb. cans, \$1 gr. \$9.00

Black Kid Paste, 5 lb. cans, each. 50¢

Ladd's Black Beauty Liquid, per 100 tins. 6.75

Joseph Dixon's, 3 pt. gr. \$5.75. 10%

Dixon's Plumbeago, 3 pt. gr. \$6.00

Fireside, 3 pt. gr. \$2.50

Gem, 3 pt. gr. \$1.50. 10%

Japanese, 3 pt. gr. \$5.50

Jet Black, 3 pt. gr. \$5.50

Peerless Iron Enamel, 10 oz. cans, \$1 doz. \$1.50

Poppers, Corn—

1 qt. Square. doz. \$0.38; gro. \$8.75

1 qt. Round. doz. \$1.00; gro. \$1.00

1/2 qt. Square. doz. \$1.10; gro. \$1.50

2 qt. Square. doz. \$1.35; gro. \$13.50

Post Hole and Tree Augers and Diggers—

See also Diggers, Post Hole, &c.

Posts, Steel—

Steel Fence Posts, each, 5 ft. 42¢; 6 ft. 66¢; 6 1/2 ft. 46¢.

Steel Hitching Posts. each \$1.30

Potato Parers—

See Parers, Potato.

Pots, Glue—

Enamelled. 35¢@10%

Tinned. 30¢@10%

Powder—

In Canisters:

Duck, 1 lb. each 45¢

Fine Sporting, 1 lb. each 75¢

Rifle, 1/2 lb. each 15¢

Rifle, 1 lb. each 25¢

In Kegs:

12 1/2-lb. kegs. \$3.50

25-lb. kegs. \$4.50

King's Semi-Smokeless:

Keg (25 lb. bulk). \$6.50

Half Keg (12 1/2 lb. bulk). \$3.50

Quarter Keg (6 1/2 lb. bulk). \$1.50

Case 24 (1 lb. cans bulk). \$4.50

King's Smokeless: Shot Gun. Rifle.

Keg (25 lb. bulk). \$12.00 \$15.00

Half Keg (12 1/2 lb. bulk). 6.25 7.75

Quarter Keg (6 1/2 lb. bulk). 3.25 4.00

Case 24 (1 lb. cans bulk). 14.00 17.00

Half case 12 (1 lb. c. bk.). 7.25 8.75

Presses—**Fruit and Jelly—**

Enterprise Mfg. Co. 20@25%

Seal Presses—

Morrill's No. 1, 3 pt. doz. \$20.00. 50%

Pruning Hooks and Shears

See Shears.

Pullers, Nail—

Cyclops. 50%

Miller's Falls, No. 3, 3 pt. doz. \$12.00

33¢@10%

Morrill's No. 1, Nail Puller, 3 pt. doz. \$20.00

50%

Pearson No. 1, Cyclone Spike Puller, each \$30.00

50%

The Scranton Co., Case Lots:

No. 2B (large). \$5.50

No. 3B (small). \$5.00

Smith & Hemenway Co.:

Diamond B. 70% Giant. 50%

Staple Pullers, Utica and Davisson. 60%

Pulleys, Single Wheel—

Inch. 1/2 1 1/4 2 3 5 8 10

Awning or Tackle. doz. \$0.30 .45 .60 1.00

Hot House. doz. \$0.65 .85 1.20

Inch. 1/2 1 1/4 2 3 5 8 10

Screw. doz. \$0.16 .19 .25 .30

Side. doz. \$0.25 .40 .55 .60

Inch. 1/2 1 1/4 2 3 5 8 10

Sash Pulleys—

Common Frame; Square or Round End, per doz. 1/2 and 2 in. 17@20¢

Auger Mortise, no Face Plate, per doz. 1/2 and 2 in. 20@21¢

Acme No. 35, 1 1/2 in., 19¢; 2 in., 20¢; American Pulley Co.:

Wrought Steel American Plain Axle. 15@20¢

Wrought Steel Eagle. 1/2@20¢

Fox-All-Steel, Nos. 3 and 7, 1 in. 20@25¢

Grand Rapids All Steel Noiseless. 50%

Niagara, No. 25, 1 1/2 in., 19¢; 2 in., 20¢; 3 in., 20¢

No. 26 Troc. 1 1/2 in., 14¢; 2 in., 16¢; Star, No. 26, 1 1/2 in., 19¢; 2 in., 20¢

Tackle Blocks—See Blocks.

Pumps—

Cistern. 50%

Pitcher Spout. 75@75@10@

Wood Pumps, Tubing, &c. 50%

Barnes Dbl. Acting (low list). 40@5@7

Barnes Pitcher Spout. 75@5@

Contractors' Rubber Diaphragm. 50@5@7

2 R. A. L. Block Co. 50@5@7

Daisy Spray Pump. 50@5@7

Registers—List July 1, 1903.Japanned, Electroplated and Bronzed. 66 1/2%
White Porcelain Enamel. 60%
Solid Brass or Bronze Metal. 25%**Revolvers—**

Single Action. 35¢@\$1.00

Double Action, except 44 cal. \$2.00

Double Action, 44 cal. \$2.00

Automatic. \$4.00

Hammerless. \$4.50

Riddles, Hardware Grade

16 in. per doz. \$2.50@\$2.75

17 in. per doz. \$2.75@\$3.00

18 in. per doz. \$3.00@\$3.25

Rings and Ringers—**Bull Rings—**

Steel. \$0.70 0.75 0.80 doz.

Copper. \$1.20 1.40 1.80 doz.

Hog Rings and Ringers—

Hill's Rings, gro. boxes. \$1.25

Hill's Ringers, Gray Iron, doz. 60¢

Hill's Ringers, Malleable Iron. doz. 80¢

Blair's Rings. per gro. \$1.00

Blair's Ringers. per doz. 75¢

Brown's Rings. per gro. \$1.25

Brown's Ringers. per doz. 75¢

Rivets and Burrs—

Copper. 40@10@10%

Carriage, Coopers', Tinnings, &c.

Black. 70@10@10%

Metallic Tinned. 70%

Bifurcated and Tubular—

Assorted in Boxes.

Bifurcated, per doz. boxes, paste-board boxes, 50 count, 23@25¢

Tin boxes, 100 count, 29@32¢

Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢

Rollers—

Cronk's Stay, No. 50. \$1.00

Cronk's Brinkerhoff No. 50. \$0.60

No. 56. \$0.75; No. 60. \$0.75

Lane's Stay. 40%

Richards' Stay.

Handy Adj. and Reversible No. 53.75¢

O. K. Adj. and Reversible No. 58.50¢

Lag Screw, Nos. 55 and 57. 50%

Underwriters', Nos. 50, 50. 50%

Favorite, No. 54. 50%

Rope—

Manila, 7-16 in. diam. and larger; Pure. lb. 18@13 1/2@

Steel, 7-16 in. diam. and larger; Pure. lb. 9 1/4@

Sisal, 7-16 in. diam. and larger; No. 2 quality. lb. 7 1/2@8¢

Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:

Mixed. lb. 7 1/2@8¢

Pure. lb. 9 1/4@9¢

Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred:

Mixed. lb. 7@7 1/2¢

Pure. lb. 8¢

Cotton Rope:

Best, 1/4-in. and larger. 18@20¢

Medium, 1/4-in. and larger. 18@20¢

Common, 1/4-in. and larger. 10¢

In coils, 1/4¢ advance.

Jute Rope:

Thread, No. 1, 1/4-in. & up, lb. 18@20¢

Thread, No. 2, 1/4-in. & up, lb. 7 1/2 to 8¢

Wire Rope—

Galvanized. 37 1/2@21 1/2@

Plain. 45@21 1/2@

Ropes, Hammock—

Covert Mfg. Co.:

Jute, 35%; Sisal. 30%

Rules—

Boxwood. 60@60@10%

Ivory. 35@10@35@10@5%

Chapin-Stephens Co.:

Boxwood. 60%

Flexifold. 40%

Ivory. 25@25@10%

Miscellaneous. 50@50@10%

Stephens' Combination. 55%

Stationers'. 50@50@10%

Keuffel & Esser Co.:

Folding Wood. 35@10%

Folding Steel. 33

Saws—

Atkins' Circular	45%
Band	50@50&10%
Butcher Saws	50%
Cross Cuts	35%
One-Man Cross Cut	40%
Narrow Cross Cut	50%
Hand, Rip and Panel	35&5%
Miter Box and Compass	40%
Mulay, Mill and Drag	45%
Wood Saws	40&10%

Chapin-Stephens Co.: Turning Saws and Frames. 30@30&10%

Diamond Saw & Stamping Works:

Sterling Kitchen Saws. 30&10@10%

Dissot's: Circular, Solid and Ins'ted Tooth. 50%

Band, 2 to 18 in. wide. 50%

Band, 1/4 to 1 1/4. 50%

Crosscuts. 45%

Narrow Crosscuts. 50%

Mulay, Mill and Drag. 50%

Framed Woodsaws. 25%

Wood saws. 25%

Wood saws, Rode, Tinned. 15%

Band Saw, No. 12, 99, 9, 18, d100. 15%

18, 12, 76, 77, 8, 9, 10. 25%

Hand Saws, Nos. 7, 107, 107 1/2, 9, 1.

0, 60, Combination. 30%

Compass, Key Hole, &c. 25%

Butcher Saws and Blades. 30%

C. E. Jennings & Co.'s: Back Saws. 16%

Butcher Saws. 25&7 1/2%

Compass and Key Hole Saws. 33&7 1/2%

Framed Wood Saws. 25&7 1/2%

Hand Saws. 12%

Wood Saw Blades. 33&7 1/2%

Millers Falls: Butcher Saws. 15&10%

Star Saw Blades. 15&10%

Massachusetts Saw Works: Victor Kitchen Saws. 40&10&50%

Butcher Saw Blades. 35&40%

Peace & Richardson's Hand Saws. 30%

Simonds': Circular Saws. 45%

Crescent Grand Cross Cut Saws. 30

One-Man Cross Cut. 10&10%

Gang Mill, Mulay and Drag Saws. 50%

Band Saws. 50%

Back Saws. 25&25&7 1/2%

Butcher Saws. 35&35&7 1/2%

Hand Saws. 25&25&7 1/2%

Hand Saws, Bay State Brand. 45%

Compass, Key Hole, &c. 25&7 1/2%

Wood Saws. 40&7 1/2%

Wheeler, Madden & Clemens Mfg. Co.'s Cross Cut Saws. 50%

Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A. 35%

Dissot's: Concave Blades. 25%

Keystone Blades. 35%

Hack & J. Frames. 30%

Simonds' Vile Co. 35%

C. E. Jennings & Co.'s: Hack Saw Frames, Nos. 175, 180. 180...

Hack Saws, Nos. 175, 180, complete. 40&7 1/2%

Goodell's Hack Saw Blades. 40&10%

Griffith's Hack Saw Frames. 35&5&10%

Griffith's Hack Saw Blades. 35&5&10%

Star Hack Saws and Blades. 15&10%

Sterling Hack Saw Frames. 30&10&10%

Sterling Hack Saw Machines, each, No. 1, \$25.00; No. 2, \$30.00, 10%

Victor Hack Saw Blades. 20%

Victor Hack Saw Frames. 40%

Scroll—

Barnes, No. 7, \$15. 25%

Barnes' Scroll Saw Blades. 40%

Barnes' Velocipede Power Scroll Saw, without boring attachment. 18%

with boring attachment. 22. 20%

Lester, complete, \$10.00. 15&10%

Rogers, complete, \$3.50 and \$4.00. 15&10%

Seales—

Family, Turnbull's. 50@50&10%

Counter:

Hatch, Platform, 1/2 oz. to 1/4 lbs. 1/2 oz., \$15. 50

Two Platforms, 1/2 oz. to 8 lbs. 1/2 oz., \$16.00

Union Platform, Plain. \$1.70@1.90

Union Platform, Std. \$1.85@2.15

Chatillon's:

Eureka. 25%

Favorite. 40%

Crocer's Trip Scales. 50%

The Standard Portables. 40%

The Standard R. R. and Wagons. 50&10%

Scrapers—

Boz, 1 Handle. doz. \$2.60@2.85

Boz, 2 Handle. doz. \$2.50@2.60

Ship. Light, \$2.00; Heavy, \$3.50

Chapin-Stephens Co., Box. 30@30&10%

Richards Mfg. Co., Foot. 60%

Screws—Bench and Hand

Bench, Iron, doz. 1 in., \$2.50@2.75

2 1/2, 1/2, \$3.00@3.25; 1/4, \$3.50@3.75

Bench, Wood. 20@20&10% Hand, Wood. 70@10@70@10@10%

Chapin-Stephens Co., Hand. 70@70@10&2 1/2%

Coach, Lag and Hand Rail—

Lag, Cone Point. 75@10@10%

Coach, Gimlet Point. 75@10@5%

Hand Rail. 70@10@75%

Jack Screws—

Standard List. 70@10@75%

Millers Falls. 50@10@10%

Swett Iron Works. 70@75%

Machine—

Cut Thread, Iron, Brass or Bronze.

Flat Head or Round Head. 50@50@10%

Fillister Head. 40@40@10%

Rolled Thread, F. H. or R. H.. Iron. 75@10@10%

F. H. or R. H., Brass, Nos. 8 to 14. 65@10%

Set and Cap—

Set (Iron).	75@10@7 1/2%
Set (Steel), net advance over Iron.	25%
Sq. Hd. Cap.	70@10@7 1/2%
Hex. Hd. Cap.	70@10@7 1/2%
Rd. Hd. Cap.	50@7 1/2%
Fillister Hd. Cap.	60@7 1/2%

Wood—

List July 23, 1903.

Flat Head, Iron.	87@5@65@1/2%
Round Head, Iron.	83@5@65@1/2%
Flat Head, Brass.	80@5@65@1/2%
Round Head, Brass.	77@5@65@1/2%
Flat Head, Bronze.	75@5@65@1/2%
Round Head, Bronze.	72@5@65@1/2%
Drive Screws.	87@5@65@1/2%

Scroll Saws—

See Saws, Scroll.

Scythes—

Per doz.

Grass, No. 1, Plain.	\$6.25@6.75
Clipper, Bronzed Webb.	\$6.50@7.00
No. 3 Clipper, Pol'd Webb.	\$6.75@7.25
No. 6 Clipper and Solid Steel.	\$7.00@7.50
Bush, Weed and Bramble.	26.50@7.00
Grain, No. 1.	\$8.25@8.75
Bronzed Webb, No. 1.	\$8.50@9.00
Nos. 3 and 4 Clipper, Grain.	\$8.75@9.25
Solid Steel, No. 6.	\$9.25@9.75

Seeders, Raisin—

Enterprise. 25@30%

Sets—Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9; 5, \$7. 50%

Millers Falls Adj. Tool Handles, Nos. 1, \$12; 2, \$12; 4, \$12; No. 5, \$18. 20@10%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel. \$20 sets \$30

Sets, Nail—

Octagon. gro. \$3.50@3.75

Buck Bros. 27@%

Cannon's Diamond Point, \$1 gro. 12%

Mayhew's. gro. \$9.00

Snell's Corrugated, Cup Pt. 40@10%

Victor Knurled Cup Pt. gro. \$7.50

Rivet—

Regular List. 75@75@10%

Saw—

Atkin's: Criterion. 40%

Adjustable. 40%

Dissot's Star, Monarch and Triumphant. 30%

Morrill's No. 1. \$15.00

Nos. 3 and 4, Cross Cut. \$20.60

No. 5, Mill. \$30.00

Nos. 10, 11, 95. \$15.60

No. 1 Old Style. \$16.25

Giant Royal Cross Cut. \$9.00

Royal, Hand. \$1.00

Taintor Positive. \$1.00

Shaving—

Fox Shaving Sets, No. 30. \$10.00

\$10.00, net, \$24.00

Smith & Hemenway Co.'s. 75%

Sharpeners, Knife—

Pike Mfg. Co.: Fast Cut Pocket Knife Hones. \$1.50

Mounted Kitchen Sand Stone. \$1.50

Natural Grit Carving Knife Hones, \$1.00

Quick Cut Emery Carving Knife Hones, \$1.00

Quick Edge Pocket Knife Hones, \$1.00

Smith & Hemenway Co., Eureka. 50%

Smith & Hemenway Co., Eureka. 50%

Skate—

Smith & Hemenway Co., Eureka. 50%

Shaves, Spoke—

Iron. doz. \$1.10@1.25

Wood. doz. \$1.75@2.25

Bailey's (Stanley R. & L. Co.). 45%

Chapin-Stephens Co. 30@30@10%

Goodell's. \$9.00. 15&10%

Shears—

Cast Iron. 7 1/2@8 1/2

Best. \$16.00. 18.00. 20.00 gro.

Good. \$13.00. 15.00. 17.00 gro.

Cheap. \$5.00. 6.00. 7.00 gro.

Straight Trimmers, &c.

Shears, Tailor's—

Bailey's. 10@10@10

Heinrich's Tailor's Shears. 10@10@10

Wilkinson Shear & Cutlery Co. Sheep, 1900 list. 30@10@5%

Grass. 50@10@10%

Horse or Mule. 50@10@10%

Note.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—

Cast Iron. 70@75@10%

Steel. 40@45%

Slates, School—

Factory Shipments.

"D" Slates. 30@25@10%

Eureka, Unexcelled No. 1. 60@6 tens

Victor A, Noiseless. 60@1 tens 45%

Pruning Shears—

Cronk's Hand Shears. 33 1/2%

Cronk's Wood Handle Shears. 33 1/2%

Dissot's Combined Pruning Hook and Saw. # doz. \$18.00. 25%

Dissot's Pruning Hook only, # doz. \$12.00. 25%

John T. Henry Mfg. Co.: Pruning Shears, all grades. 40%

P. S. & W. Co.: 40@10@10%

Scythe Stones—

Pike Mfg. Co.	1901 list:
Black Diamond S. S.	per gro. \$12.00
Lamoille S. S.	per gro. \$11.00
White Mountain S. S.	per gro. \$9.00
Green Mountain S. S.	per gro. \$6.00
Extra Indian Pond S. S.	per gro. \$7.50
No. 1 Indian Pond S. S.	per gro. \$7.50
No. 2 Indian Pond S. S.	per gro. \$5.50
Leader Rock End S. S.	per gro. \$4.50
Quick Cut Emery	per gro. \$10.00
Pine Coronado	per gro. \$18.00
Crescent	per gro. \$7.00
Emery Scythe Rifles, 2 Coat	\$3
Emery Scythe Rifles, 3 Coat	\$10
Emery Scythe Rifles, 4 Coat	\$12
Balance of 1904 list	33 1/2 %
Electro (Artificial)	per gro. \$12.00
Lightning (Artificial)	per gro. \$18.00
	33 1/2 %

Stoppers, Bottle—

Victor Bottle Stoppers	per gro. \$9.00
------------------------	-----------------

Stops—Bench—

Millers Falls	15 & 10%
Morrill's, per doz.	50%
Morrill's, No. 1	\$10.00
Morrill's, No. 2	\$12.50

Door—

Chapin-Stephens Co.	50 @ 50 & 10%
---------------------	---------------

Plane—

Chapin-Stephens Co.	20%
---------------------	-----

Straps—Box—

Gary's Universal, case lots	20 & 10 & 10%
-----------------------------	---------------

Stretchers, Carpet—

Cast Iron, Steel Points, dos.	60 @ 60 & 10%
-------------------------------	---------------

Socket	per doz. \$1.66
--------	-----------------

Excelsior Stretcher and Tack Hammer Combined	per doz. \$6.00
--	-----------------

Stuffers, Sausage—

Enterprise Mfg. Co.	25 @ 25 & 7 1/2 %
---------------------	-------------------

National Specialty Co., list Jan. 1, 1902	30 & 5%
---	---------

P. S. & W. Co.	40 & 10 & 5%
----------------	--------------

Sweepers, Carpet—

Bissell Carpet Sweeper Co.	per doz.
----------------------------	----------

Superba, Crotch Mahogany	\$36.00
--------------------------	---------

Triumph, Fancy Veneer	\$33.00
-----------------------	---------

Parlor Queen, Fig. Rosewood	\$30.00
-----------------------------	---------

Elite, Hungarian Ash	\$29.00
----------------------	---------

American Queen, Fig. Mahogany	\$27.00
-------------------------------	---------

Ideal, Bird's-Eye Maple	\$25.00
-------------------------	---------

Grand Rapids Nickel	\$24.00
---------------------	---------

Japan	\$22.00
-------	---------

Standard Nickel	\$22.00; Japan \$20.00
-----------------	------------------------

Crown Jewel Nickel	\$21.00; Japan \$19.00
--------------------	------------------------

Crystal, Glass Top	\$36.00
--------------------	---------

Grand, 17 in. wide	\$36.00
--------------------	---------

Club, 21 in. wide	\$54.00
-------------------	---------

Hall, 28 in. wide	\$60.00
-------------------	---------

NOTE.—Rebates: 50¢ per dozen on three dozen lots; \$1 per dozen on five dozen lots; \$2 per dozen on ten dozen lots; \$2.50 per dozen on twenty-five dozen lots.

Tacks, Finishing Nails, &c.

American Carpet Tacks	90 & 25 %
-----------------------	-----------

American Cut Tacks	90 & 25 %
--------------------	-----------

Swedes' Cut Tacks	90 & 25 %
-------------------	-----------

Swedes' Upholsterers'	90 & 35 %
-----------------------	-----------

Gimp Tacks	90 & 35 %
------------	-----------

Lace Tacks	90 & 35 %
------------	-----------

Trimmers' Tacks	90 & 25 %
-----------------	-----------

Looking Glass Tacks	65 %
---------------------	------

Bill Posters' and Railroad Tacks	90 & 40 %
----------------------------------	-----------

Hungarian Nails	80 & 10 %
-----------------	-----------

Finishing Nails	70 %
-----------------	------

Trunk and Clout Nails	80 %
-----------------------	------

NOTE.—The above prices are for straight weights.

Miscellaneous—

Double Pointed Tacks	90 & 10 @ 90 & 10 & 10 %
----------------------	--------------------------

See also Nails, Wire.

Tanks, Oil and Gasoline—

Wilson & Friend Co.	
---------------------	--

Gal.	Gasoline
------	----------

30	\$2.75
----	--------

60	\$3.50
----	--------

120	\$5.00
-----	--------

	\$6.75
--	--------

Tapes, Measuring—

American Asses' Skin	50 @ —
----------------------	--------

Patent Leather	25 @ 25 & 5 %
----------------	---------------

Steel	33 1/3 %
-------	----------

Chesterman's	25 @ 25 & 5 %
--------------	---------------

Kaufell & Easer Co.	
---------------------	--

Favorite, Ass Skin	40 & 10 @ 50 %
--------------------	----------------

Favorite, Duck and Leather	25 & 10 @ 25 & 10 %
----------------------------	---------------------

Metallic and Steel, lower, 35 @ 35 & 5 %	
--	--

Pocket	35 @ 35 & 5 %
--------	---------------

Steel	33 1/3 %
-------	----------

Lufkin's	
----------	--

Assen Skin	40 & 10 @ 50 %
------------	----------------

Metallic	30 @ 25 & 10 %
----------	----------------

Patent Bend, Leather	25 & 5 @ 25 & 10 %
----------------------	--------------------

Pocket	40 @ 40 & 5 %
--------	---------------

Steel	33 1/3 %
-------	----------

Wiebusch & Hilger:	
--------------------	--

Chesterman's Metallic, No. 34L	
--------------------------------	--

etc.	25 %

<

